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*12th Year of Publication*

NOVEMBER,
20c

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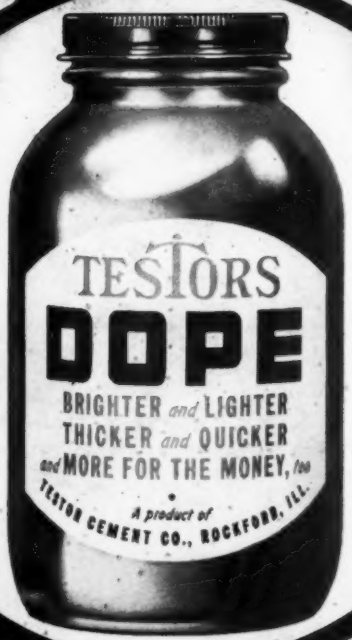


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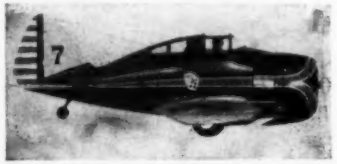

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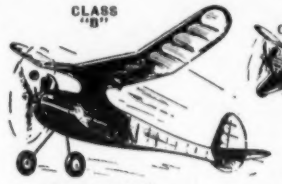

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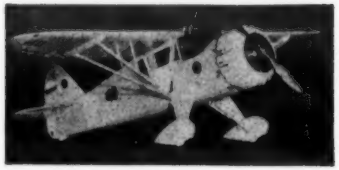

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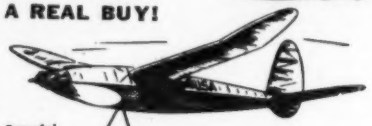

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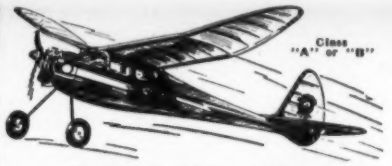

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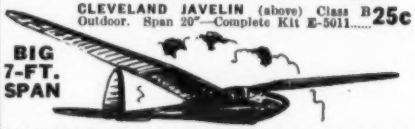

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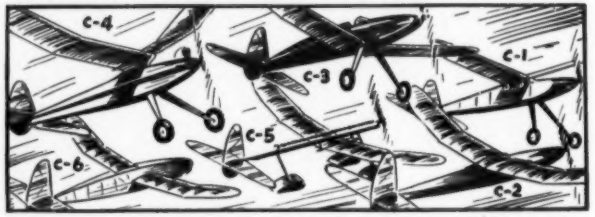


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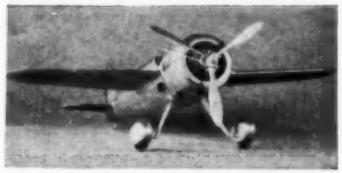

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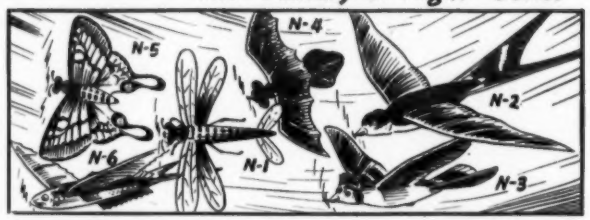


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12th YEAR OF PUBLICATION

*VOL. XXIII* *No. 5*

*Edited by Charles Hampson Grant*

# CONTENTS

NOVEMBER, 1940

Youth Takes Wing
By Douglas J. Ingells ..... 8

Seversky P-35 (Detailed 3-View)
By William Wylam ..... 10

Building The Profile Playboy
By Rex Hall ..... 12

Douglas XB-19 Bomber (3-View) ..... 14

The World's Biggest Bomber
By Robert McLarren ..... 15

"Wedgy" The Record Smasher
By Leon Shulman ..... 16

Fundamentals Of Model Plane Control
By Charles Hampson Grant ..... 19

Class "C" Duplex
By Tom Engelman ..... 20

Frontiers
By Robert C. Morrison ..... 21

Gas Lines ..... 22

A Flying Messerschmitt Pursuit
By Earl Stahl ..... 24

Designing Gas Models For Performance
By Leo A. Weiss ..... 29

Air Ways ..... 30

Academy of Model Aeronautics ..... 32

Flash News ..... 33

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Published Monthly by JAY PUBLISHING CORP., Mount Morris, Illinois.
Editorial and General Offices, 551 Fifth Avenue, New York City.
George C. Johnson, President Jay P. Cleveland, Advertising Manager
551 Fifth Avenue, New York, N.Y.
Entered as second-class matter Dec. 6, 1934, at the post office at Mount Morris, Ill., under the act of March 3, 1879. Additional entry at New York, N. Y.
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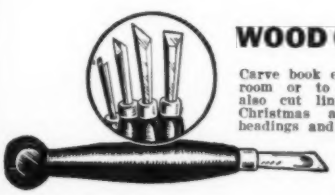

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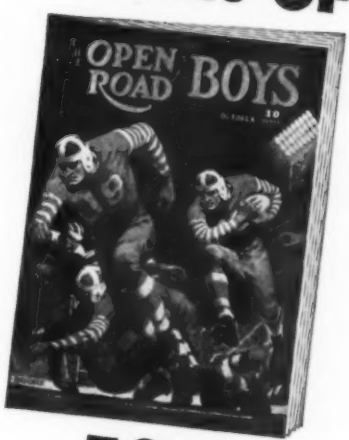


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# YOUTH TAKES WING

By DOUGLAS J. INGELLS
With Assistance Of
Prof. ROLAND H. SPAULDING

YOU can be a pilot:

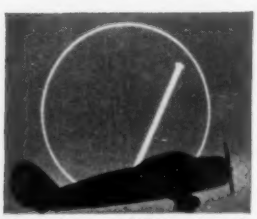
If you are a good American citizen and have not yet reached your twenty-sixth birthday, but at the same time are more than eighteen years of age; possess an average mental intellect with near-perfect physique, plus a desire to "win your wings," the chance you have been waiting for has been tossed right into your lap. All those things taken for granted, Uncle Sam is willing to spend his money to teach you how to fly; at least, that is the plan set forth by the Civil Aeronautics Board in colleges and aviation clubs throughout the country.

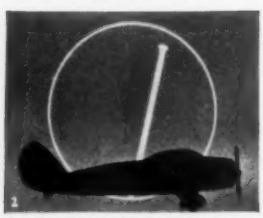
The whole idea started back in the spring of 1939 when a group of men who headed the CAA (Civil Aeronautics Authority) thought it a good plan to train some of America's air-minded youth to fly at the expense of the government, with the hope of building up a reserve for the nation's air defense. To set their new plan into motion they selected thirteen colleges where ground-school and flight courses were to be given as full credit courses along with the regular college classes. Seventy-five college students were enrolled in the new classes and by the end of the first semester the plan had worked out so successfully that Uncle Sam decided to set up more of the aviation schools in numerous colleges throughout the U. S. The result has been that today, as fall college terms start their regular schedules, the Civilian Pilot Training program calls for the training of 45,000 pilots by July 1, 1941.

Training that many pilots would be a big job, nearly an impossible one, for the army's expert training centers to tackle, even if they used every expanded training facility; but the idea isn't to train 45,000 military pilots, but merely to get the primary stage of training over to the largest group of probable flyers in the least possible

Training begins 3 hrs. after program starts

Civilian flying instructor trains for war-time flying





Here the art of flying is reduced to its simplest element in a series of diagrams showing how the plane is controlled by the "stick." 1. With the plane on the ground at the start, the stick slightly forward: 2. Stick in position for take-off:

Emmet Hamer, first college student to fly under CAA Program

Students learn to check the engine before a flight

## How Young Americans Are Learning to Fly Through Uncle Sam's C.A.A. System of Flight and Ground School Training—How You Can Be One of Them

time, with the hope that many of these will continue on with aviation as a career and serve as a backbone for the industry should any serious emergency arise.

The civilian pilot training program had its birth, not as a military training program to get more pilots for the air corps and navy flying squadrons, but rather to stop the "bottle-neck" in the aviation industry which was sure to come if manufacturers were to continue turning out planes so rapidly without an equally growing number of pilots: Something had to be done to create a new incentive to get the American youth to fly.

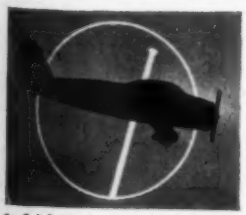
Scene at a typical ground school: Students learn to overhaul planes and motors

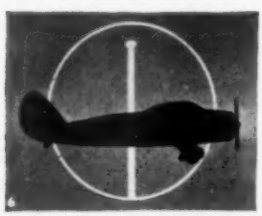
First thing to consider about flying today and the primary reason why many don't fly

*(Continued on page 48)*

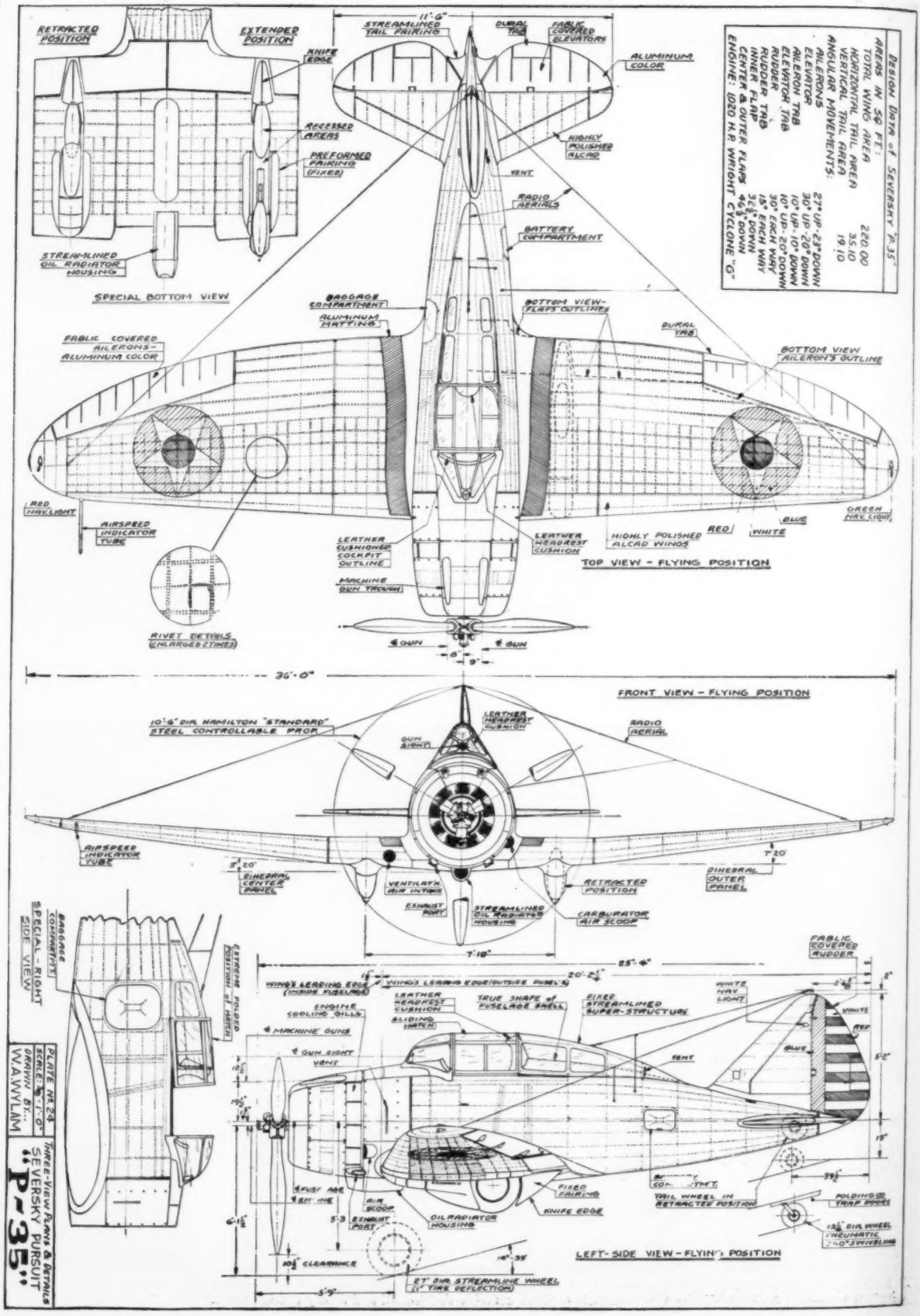
Learning how to overhaul an engine in the ground school

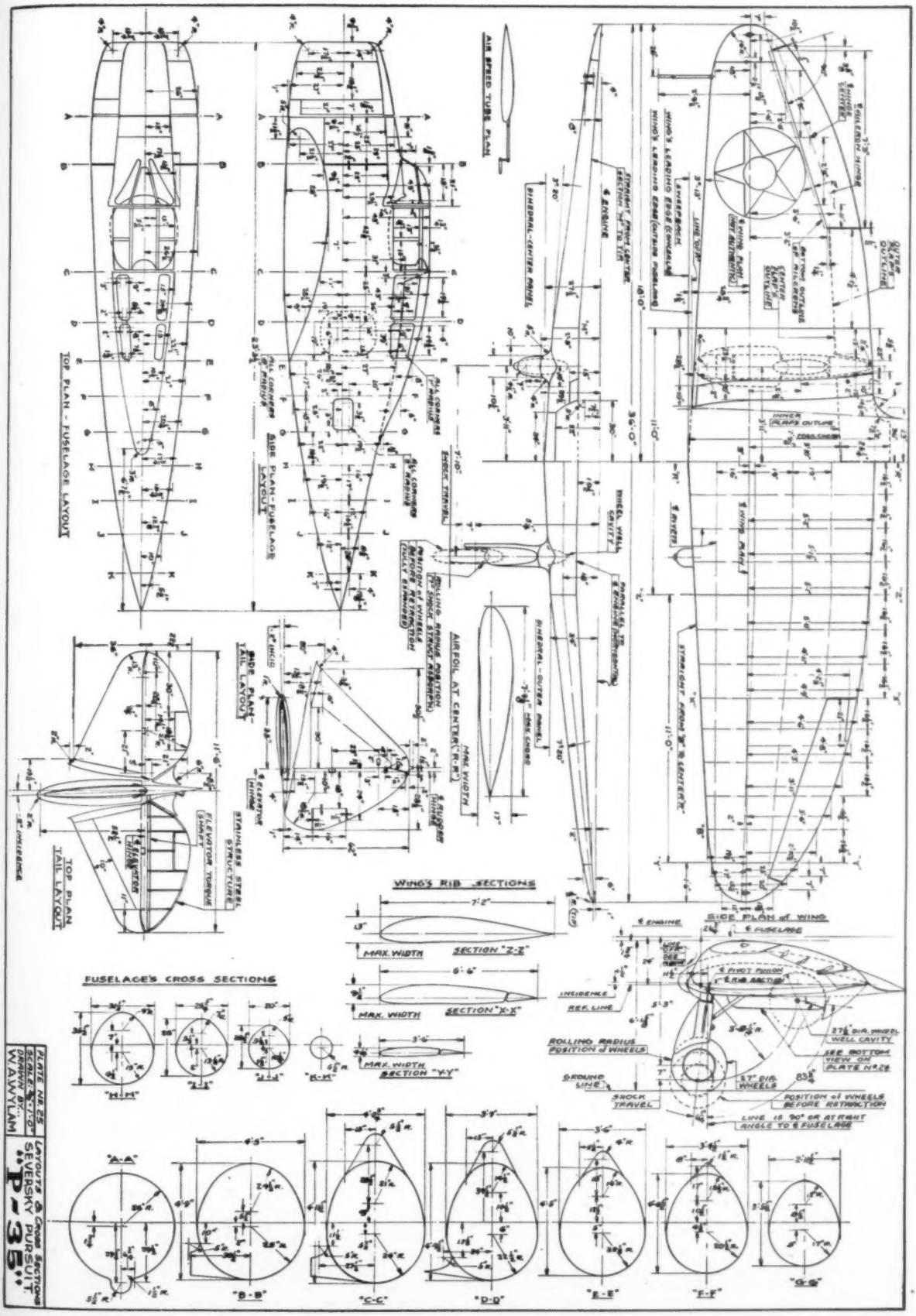
The instructor explains details of the power unit

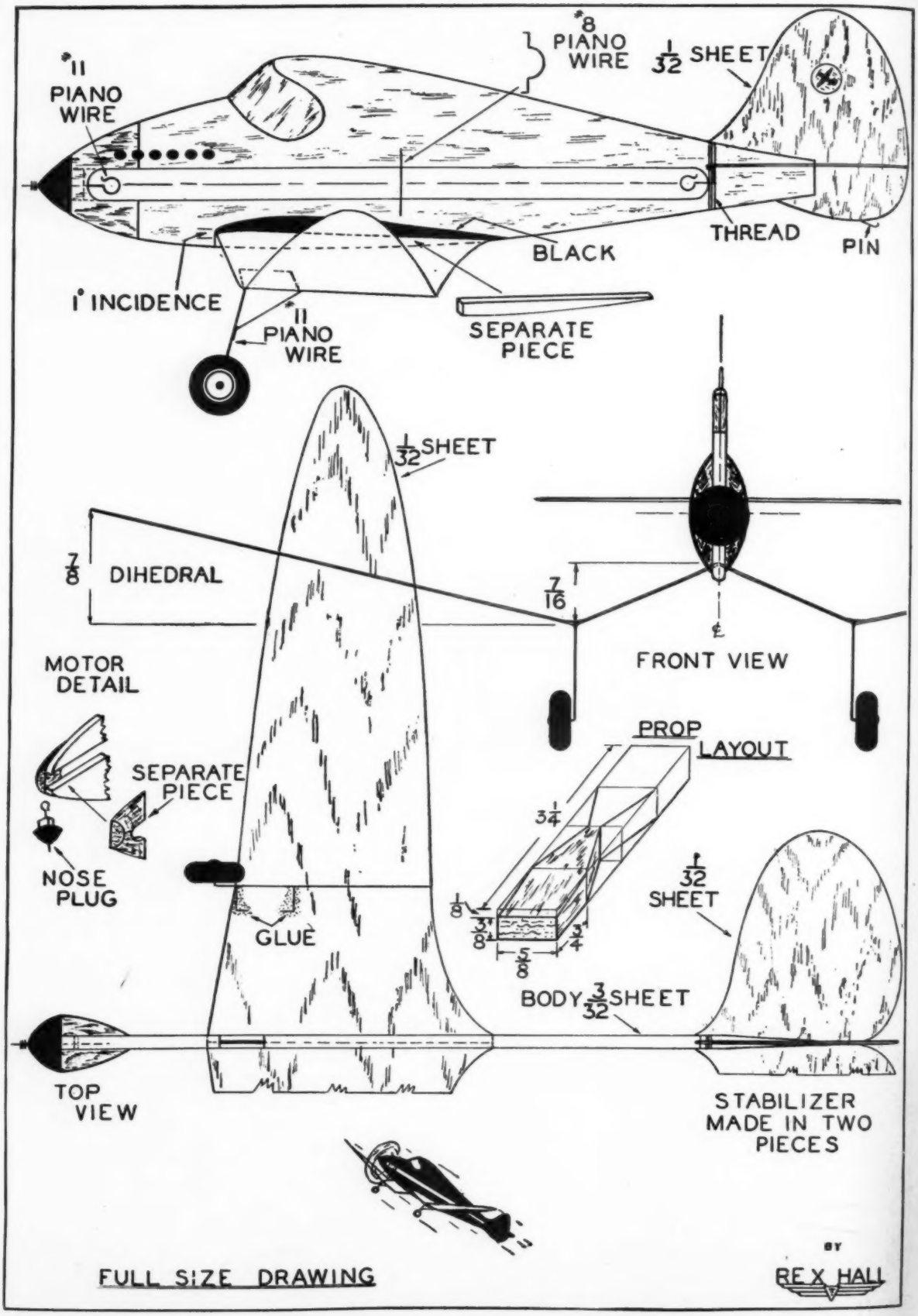




3. Stick back to gain altitude: 4. Stick vertical for level flight: 5. Stick forward for glide: 6. Leveling off: 7. Stick partly back, lowering tail to land: 8. Stick all the way back when plane contacts the ground and finally comes to rest.


RETRACTED POSITION
EXTENDED POSITION
KNIFE EDGE
ACCESSED AREAS
PREFORMED FAIRING (FIXED)
STREAMLINED OIL RADIATOR HOUSING
SPECIAL BOTTOM VIEW
11'-6"
STREAMLINED TAIL FAIRING
DURAL TAB
FABRIC COVERED ELEVATORS
ALUMINUM COLOR
HIGHLY POLISHED ALCAD
VENT
RADIO AERIALS
BATTERY COMPARTMENT
BAGGAGE COMPARTMENT
ALUMINUM MATTING
BOTTOM VIEW-FLAPS OUTLINES
FABRIC COVERED AILERONS-ALUMINUM COLOR
BOTTOM VIEW AILERON'S OUTLINE
RED NAV. LIGHT
AIRSPEED INDICATOR TUBE
LEATHER CUSHIONED COCKPIT OUTLINE
LEATHER HEADREST CUSHION
HIGHLY POLISHED ALCAD WINGS
RED
WHITE
BLUE
GREEN NAV. LIGHT
TOP VIEW - FLYING POSITION
MACHINE GUN TROUGH
4 GUN
4 GUN
RIVET DETAILS (ENLARGED 2 TIMES)
Design Data of Seversky "P-35"
AREAS IN SQ. FT.:
TOTAL WING AREA 220.00
HORIZONTAL TAIL AREA 35.10
VERTICAL TAIL AREA 19.10
ANGULAR MOVEMENTS:
AILERONS 27° UP-23° DOWN
ELEVATOR 30° UP-20° DOWN
AILERON TAB 10° UP-10° DOWN
ELEVATOR TAB 10° UP-20° DOWN
RUDDER 30° EACH WAY
RUDDER TAB 15° EACH WAY
INNER FLAP 36½° DOWN
CENTER & OUTER FLAPS 46½° DOWN
ENGINE: 1020 H.P. WRIGHT CYCLONE "G"
36'-0"
FRONT VIEW - FLYING POSITION
10'-6" DIA. HAMILTON "STANDARD" STEEL CONTROLLABLE PROP.
LEATHER HEADREST CUSHION
RADIO AERIAL
GUN SIGHT
AIRSPEED INDICATOR TUBE
3°-20' DIHEDRAL CENTER PANEL
7°-20' DIHEDRAL OUTER PANEL
VENTILATING AIR INTAKE
EXHAUST PORT
RETRACTED POSITION
STREAMLINED OIL RADIATOR HOUSING
CARBURATOR AIR SCOOP
7'-10"
SPECIAL - RIGHT SIDE VIEW
BAGGAGE COMPARTMENT
EXTREME FOLDED POSITION OF HEATER
25'-4"
20'-2½"
WING'S LEADING EDGE (INSIDE FUSELAGE)
WING'S LEADING EDGE (OUTSIDE PANEL)
FABRIC COVERED RUDDER
ENGINE COOLING GILLS
LEATHER HEADREST CUSHION
TRUE SHAPE of FUSELAGE SHELL
FIXED STREAMLINED SUPER-STRUCTURE
WHITE NAV. LIGHT
SLIDING HATCH
4 MACHINE GUNS
4 GUN SIGHT VENT
VENT
RED
BLUE
5'-6"
19"
39½"
EXHAUST MANIFOLD
AIR SCOOP
OIL RADIATOR HOUSING
FIXED FAIRING
KNIFE EDGE
TAIL WHEEL IN RETRACTED POSITION
FOLDING TRAP DOORS
10½" DIA. WHEEL PNEUMATIC
10½" CLEARANCE
14°-39'
5'-5"
4'-7" DIA. STREAMLINE WHEEL (1" TIRE DEFLECTION)
LEFT-SIDE VIEW - FLYING POSITION
PLATE NR. 24
SCALE: ¼" = 1'-0"
DRAWN BY... W.A. WYLAM
THREE-VIEW PLANS & DETAILS
SEVERSKY PURSUIT
"P-35"


TOP PLAN - FUSELAGE LAYOUT
SIDE PLAN - FUSELAGE LAYOUT
AIR SPEED TUBE PLAN
SIDE PLAN TAIL LAYOUT
TOP PLAN TAIL LAYOUT
AIRFOIL AT CENTER (R-R)
WING'S RIB SECTIONS
SECTION "Z-Z"
SECTION "X-X"
SECTION "Y-Y"
FUSELAGE'S CROSS SECTIONS
SIDE PLAN of WING
ROLLING RADIUS POSITION of WHEELS
SHOCK TRAVEL
GROUND LINE
POSITION of WHEELS BEFORE RETRACTION
LINE IS 90° OR AT RIGHT ANGLE TO ℄ FUSELAGE
PLATE NR 25
SCALE: 3/4"=1'-0"
DRAWN BY W.A.WYLAM
Layouts & Cross Sections
SEVERSKY PURSUIT
"P-35"


#11 PIANO WIRE
#8 PIANO WIRE
1/32 SHEET
THREAD
PIN
BLACK
1° INCIDENCE
#11 PIANO WIRE
SEPARATE PIECE
1/32 SHEET
7/8 DIHEDRAL
7/16
℄
FRONT VIEW
MOTOR DETAIL
SEPARATE PIECE
NOSE PLUG
GLUE
PROP LAYOUT
3 1/4
1/8
3/8
3/4
5/8
1/32 SHEET
BODY 3/32 SHEET
TOP VIEW
STABILIZER MADE IN TWO PIECES
FULL SIZE DRAWING
BY REX HALL

# BUILDING THE PROFILE PLAYBOY

The profile fuselage is simple but realistic

## A Realistic Fine Flying Craft That A Beginner Can Build and Fly With Little Difficulty Or Expense

**By REX HALL**

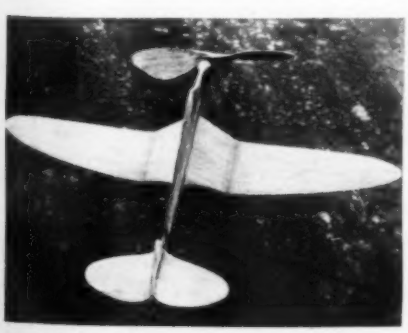
EVERY fellow who follows this fascinating hobby favors some particular type of ship. The plane presented here is a favorite among many builders. In spite of its small size, its flying qualities will surprise you, but if desired the model may be made double the size indicated in the plans: This will give longer flights.

Whether a beginner or a consistent model builder, you will enjoy building and flying this simple little plane. It takes little time to build, can be made easily and the cost is small. The profile type of construction is very simple, yet strong. Try to select a good, yet light, grade of balsa.

Now you are ready to start construction.

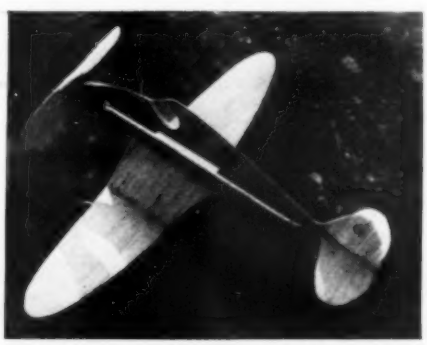
### Fuselage

A sheet of 3/32" medium-hard balsa is used for the construction of the fuselage. After the body pattern has been cut out, lay it down on a board or any flat surface and cut out the center for the rubber motor. The lower section of the fuselage is cut out for the wing placement. Next is the nose section, which is very easily made; consisting of two pieces of 1/4" sheet, one on each side. After they have been placed in position and have dried thoroughly, they are cut and rounded into shape, by using a razor blade and a piece of sandpaper. The nose plug is a standard hardwood plug with the sides slightly rounded, if necessary, to fit the contour of the nose. However, it is not necessary to buy a new plug for this purpose, just strip one off your old model.



Efficient and graceful in appearance

Make two clips from No. 8 size piano wire. Cement them to the side of the fuselage around the center cut out for the rubber motor. Then make the rear hook, also from No. 8 wire, and cement it in place. Wrap the rear hook tightly with thread to insure a lasting fit. The fuselage and all other sections should be sandpapered for lightness, because the weight has a great deal to do with the flying qualities.



Only simple operations are required to construct this all-balsa flyer

The prop for this model can be cut from a block 3-1/4" by 5/8" by 1/2" medium hard balsa. If desired a machine carved prop can be used.

### Wing Construction

The wing is one of the main parts of this model, therefore, it should be done with the greatest of care. The wing pattern should be laid on a sheet of 1/32" medium-hard balsa and later cut to the proper form by using a razor blade. This is accomplished by rubbing it down to proper form and smooth finish with a piece of fine sandpaper. The wing is cut in three places, directly in the center, and 2-1/2" from the center on each wing panel. These joints are securely glued to stand the strain of landing and other obstructions it may come in contact with. The correct amount of dihedral is then added to each wing. This should be done with care because it has much to do with the flying ability of the plane. The wing should be laid aside to allow the cement to harden. However, be sure that the wing is put in a place where there is no possible chance of it being accidentally hit before the glue has a chance to harden.

### Tail and Landing Gear

Make the tail surfaces from 1/32" sheet balsa. Take great care when cutting out the rudder to eliminate the chances of splitting the wood. The stabilizer is made in two halves which are cemented to the sides of the fuselage. Be doubly sure that the tail surfaces are lined up perfectly when you attach them as they greatly affect the flying ability of the model.

The landing gear is made of No. 11 piano wire, which is made up of four pieces. Bend the two vertical pieces first, then the two back pieces, and place all of them in position. Hardwood wheels of 5/8" diameter are used. Either solder washers onto the ends of the axle or a drop of cement to hold the wheels in place.

### To Fly the Model

Before adding power to the model try to get its flying characteristics by gliding it. Do not fly it under power until you get the correct gliding angle. When the power is added, which consists of two strands of 1/8" flat rubber, wind the prop a few times and hand-launch the model. Watch its flight carefully. If it tends to pull to the right because of its torque, correct by warping the trailing edge of the rudder in the opposite direction. If it shows any tendency to either dive or stall, it may be corrected by warping the stabilizer either up or down. Weight also can be added to the nose, if necessary.

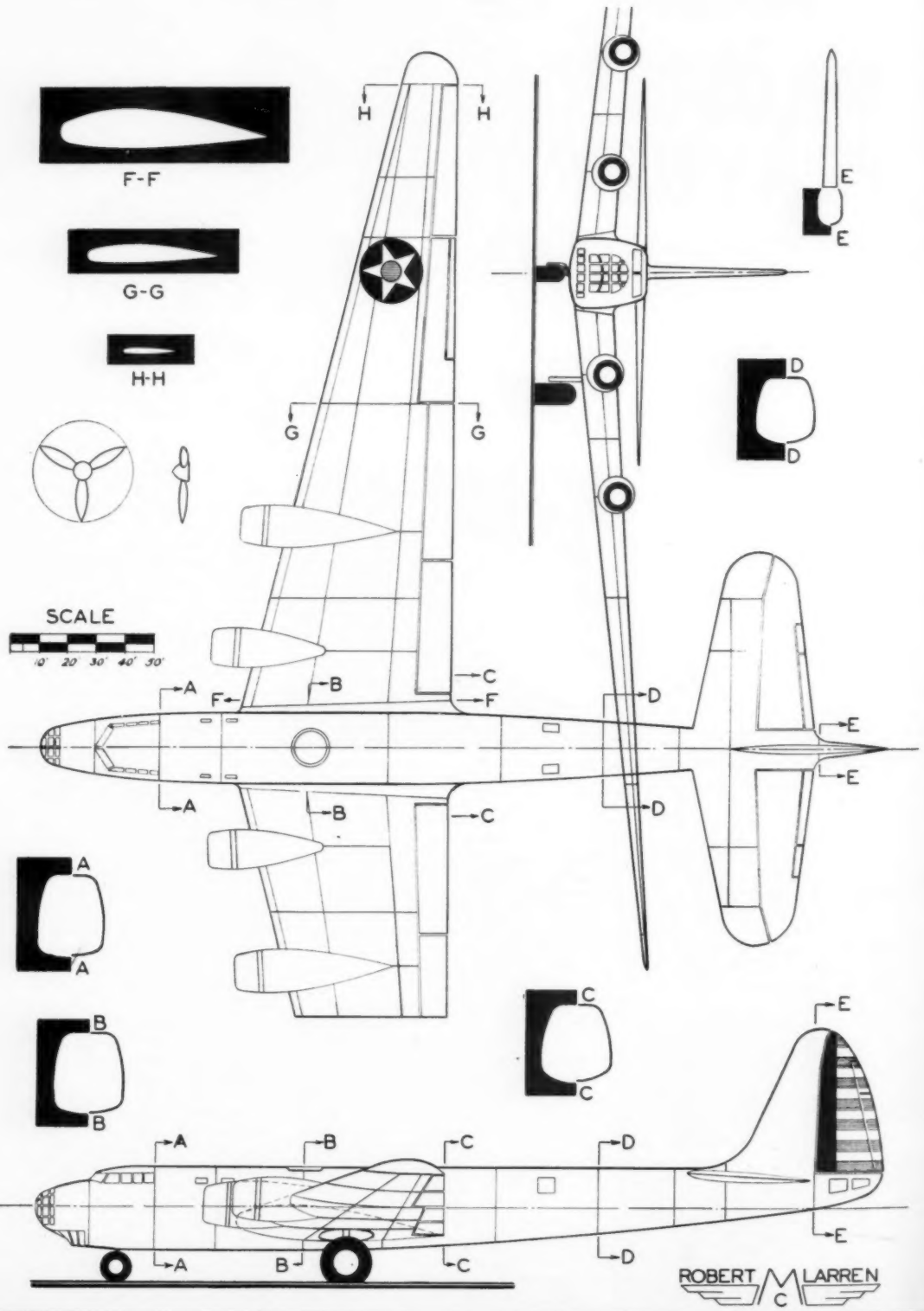
On a model of this type it is quite possible that one wing might have a little more dihedral than the other. Therefore if one wing drops in flight, you may correct this fault by sticking pins in the opposite wing.

After all final adjustments have been made wind her up to capacity then watch it go. Another important thing is to fly it when it is very calm. To prove it is an all round model just take it indoors and watch its constant flights.

*(Continued on page 72)*

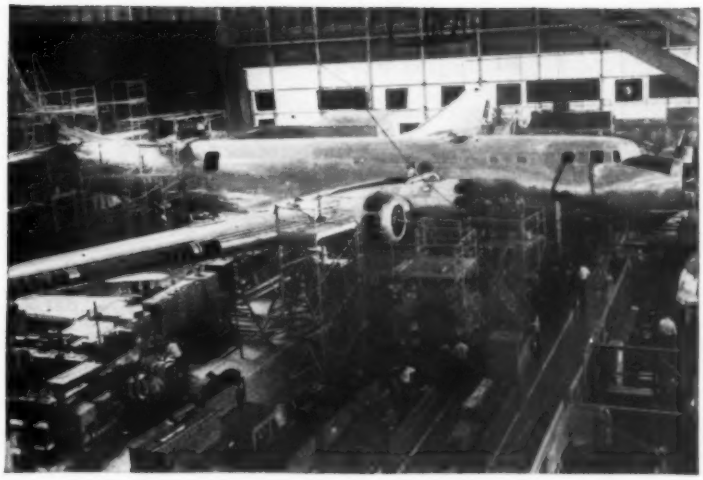
DOUGLAS XB-19 MYSTERY FLYING DREADNAUGHT

THE WORLD'S BIGGEST BOMBER



# The World's Biggest Bomber

## By ROBERT McLARREN



The giant XB-19 Bomber in process of construction at the Douglas Factory. (Acme)

FOR three years the focal point of military aviation has been located in one corner of a huge aircraft hangar located on the east end of the Douglas Aircraft Company's main Santa Monica Division plant in California. In this, the largest, single-arch structure erected in the 20th Century, over five hundred men and tools, material and equipment worth more than one million dollars have been at work behind a giant canvas curtain secured 97 feet high in the arch of the great maze of steel girders and bolted to the cement floor below. Only one door makes ingress and egress possible and only one badge permits a workman to enter that door: For this has been the United States Army Air Corps' most potent Secret Project, the gargantuan Douglas XB-19 four-motored bomber, the largest airplane ever built in the history of aviation! Surrounding Project "D" has been the most intricate, deceptive, ghostly mist of rumor that has colored a military project since Phillip II's secret Spanish Armada was constructed in shipyards surrounded by armed guards in 1588. It has been a thrill-hungry public's holiday for so much of utter fancy and nonsense has been written about this plane that any actual fact concerning it, regardless of how phenomenal it might be, would be scoffed at. Thus, MODEL AIRPLANE NEWS becomes, once again, the host at the coming-out party of a brand new military ship; becomes, too, the authority for uncolored factual information which those in aviation have been long seeking concerning this ship.

For the Douglas XB-19 is no radical voyage into a designer's nightmare. Its outlines, construction and performance are utterly conventional. Only its size, making it the peer of all huge airplanes, warrants its conception as a "mystery ship."

In order to set the picture for our detailed examination of this giant, we'll reverse the usual order of things and give you the specifications. First of all the Douglas XB-19 will have a gross weight in the near vicinity of SEVENTY TONS! It has a wing span of 212 feet (just twice that of the present Boeing B-17C ("Flying Fortress") and is 132 feet long (the span of the nation's biggest landplane, the DC-4). And if you still don't get the idea, the span of its horizontal stabilizer and elevators is 61 feet, one foot GREATER than the wing span of a standard Lockheed 16E twin-engine 14 passenger transport! And here's one more: when sitting on the ground, its vertical fin stands 42 feet high, or roughly around the four story mark in an office building!

. . . at least it's a idea!!

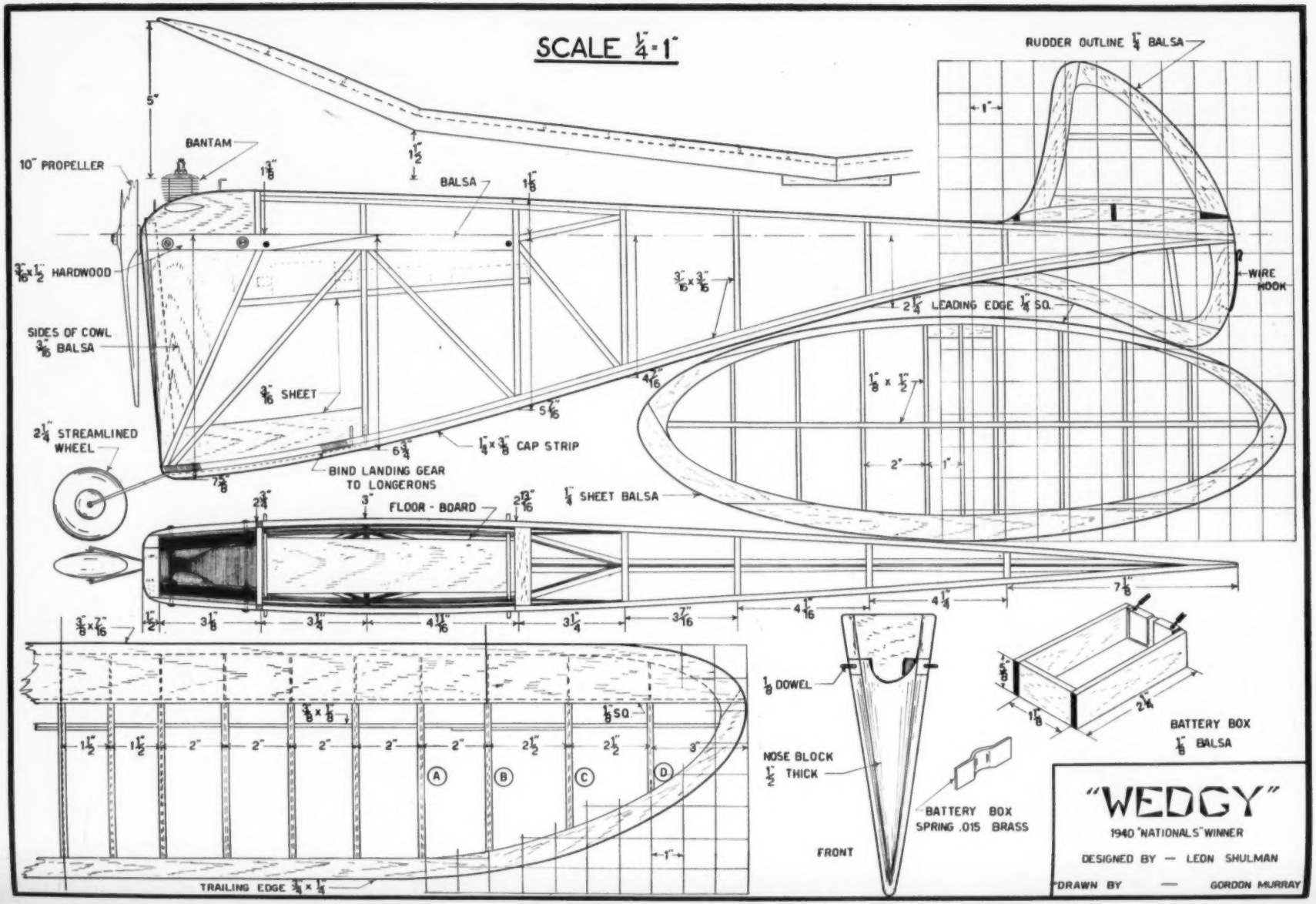
The XB-19 is a mid-wing full cantilever all-metal four-motored monoplane bomber of long, narrow, sleek lines, a single rudder and fully retractable tricycle landing gear.

The fuselage is built in a single semi-monocoque unit on a framework of closed channel formers supported at intervals by double-faced bulkheads at eight stations. Channel type stringers are riveted longitudinally through the use of flanged clips with box-type longerons supporting the torsional loads. This framework is covered with 24 ST aluminum alloy "Alclad" sheet metal riveted to the stringer flanges by conventional round headed rivets with the exception of extreme parasite drag producing areas where the rivets are of the flush type. The bomb bay area is supported by reinforced longeron trusses and by solid dual-plate bulkheads at each end. The nose portion of the fuselage is designed to serve several different functions. The upper open portion is composed of a steel metal structure to support the plastic acetate acrylin base transparent panels. The lower portion incorporates the familiar "eye-ball" arrangement in which a rotable sphere is mounted in a modified socket. The rear-most portion of the fuselage is likewise left open for the installation of a gunners position.

The wing is built up on the familiar Douglas multi-cell two-spar design first introduced by John K. Northrop on his famed "Alpha" series of early all-metal aircraft days. The wing is composed of four sections, two inner panels and two outer panels. There are no positive structural connections between these four joints, the skin and bolt angles taking the entire stress at this point.

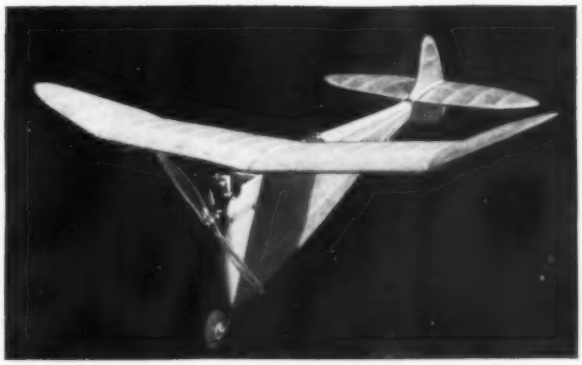
The spar ends are mounted with rubber shock cushions and access doors are provided to the internal bolting angles. The outer panels taper rapidly at the leading edge to meet the straight trailing edge at the tips, which are removable. The ailerons are composed of two independently controlled surfaces in each outer wing panels, and are of all-metal construction. The flaps are of the trailing-edge type, the entire aft surface of the wing hinging downward. The inner panel supports the engine mount structure, two in each panel. The engine mounts are of full monocoque construction bolted to the wing leading edge through heavy bolting angle flanges. Bulkheads carry the load to the front spar. Cut outs and ducts have been provided for the installation of the various items of equipment in the wing leading edge. The inner wing panel spars are continuous through the fuselage and are bolted together in the middle. The wing to fuselage joint consists of only eight bolts of a special hi-grade alloy steel which has been perfected for this particular job alone but which will

*(Continued on page 60)*


SCALE 1/4" = 1"
RUDDER OUTLINE 1/4" BALSA
1"
5"
1 1/2"
BANTAM
10" PROPELLER
1 3/8"
BALSA
1 1/8"
3/16" x 1/2" HARDWOOD
3/16" x 3/16"
WIRE HOOK
2 1/4" LEADING EDGE 1/8" SQ.
SIDES OF COWL 3/16" BALSA
3/16" SHEET
4 1/16"
1/8" x 1/2"
5 1/16"
2 1/4" STREAMLINED WHEEL
1/4" x 3/8" CAP STRIP
6 3/4"
BIND LANDING GEAR TO LONGERONS
7 7/8"
2"
1"
2 3/4"
3"
FLOOR - BOARD
2 13/16"
1/4" SHEET BALSA
3/8" x 7/16"
1/2"
3 1/8"
3 1/4"
4 1/16"
3 1/4"
3 7/16"
4 1/16"
4 1/4"
7 1/8"
3/8" x 1/8"
1/8" SQ.
1 1/2"
1 1/2"
2"
2"
2"
2"
2"
2 1/2"
2 1/2"
3"
A
B
C
D
1"
TRAILING EDGE 3/4" x 1/4"
1/8" DOWEL
NOSE BLOCK 1/2" THICK
FRONT
BATTERY BOX SPRING .015 BRASS
BATTERY BOX 1/8" BALSA
1 1/8"
2 1/4"
"WEDGY"
1940 "NATIONALS" WINNER
DESIGNED BY — LEON SHULMAN
DRAWN BY — GORDON MURRAY

# "Wedgy"- THE RECORD SMASHER

**The Class "A" 1940 Nationals Winner—A Little Ship With Many Unique Features That's Easy to Build. It Has Placed in All Contests Entered.**



"Wedgy"; a sleek, efficient and consistent flier

## By LEON SHULMAN

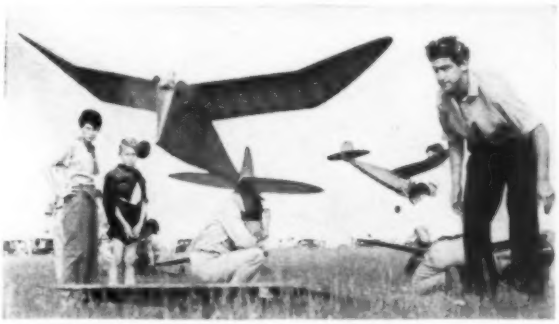
THOSE who attended the Nationals were thrilled at the sight of a small but unusually-shaped plane darting skyward with the speed of a rocket. At first glance its only resemblance to an airplane was carried out by the wings, which spread out from either side of a deep, wedge-shaped body.

It was an unusual plane, both in looks and performance. Many called it the "Flying Wedge" and in all events it certainly lived up to this name; for it "cleaved through the air with the greatest of ease" and ended up by capturing the world's record on Class A. Nor was this merely a lucky performance, for WEDGY has been winning consistently in all contests in which it has been entered.

One may look for its excellent flying qualities in the simplicity of its construction and its sound aeronautical design. The deep body helps to eliminate landing struts that cause considerable drag. The body, being shaped in such a manner, that though deep it offers small head resistance.

It has placed among the first three in every contest entered. At the Nationals it won the Class A event with a flight of 22 minutes plus.

Of course the thermals helped, as they usually do. WEDGY seems to catch thermals even at sunset and many a flight has resulted in mad dashes across country.



"Wedgy" jumps for altitude as its creator watches critically

Nine ships of different sizes have been built and all have the same characteristics—an especially tight, cork-screw climb and a tight right circular glide having great soaring tendencies with exceptional stability.

Although the profile view of the WEDGY seems not too streamline, the flight results have proved otherwise, there being very little frontal area exposed to produce much drag. The exceptional flat glide indicates efficiency. The protruding wheel from the nose of WEDGY will save many props on rough landings and aid immensely in the take-offs. The new 1940 Bantam was used as power for the WEDGY although any class A or B engine would be satisfactory.

Since all plans shown for the WEDGY are not full size, they will have to be scaled up to proper dimensions. This can be done very easily on a large sheet of brown wrapping paper with the use of a ruler, pencil, eraser, patience, common sense and a couple of hours. Care should be exercised where the dimensions are concerned, since the proportions may be changed. The body should not be too difficult to draw since it has only a V-shaped cross section with no formers to worry about. The wing is the simple type with parabolic-shaped wing tips. The stabilizer is elliptical and the rudder of simple shape.

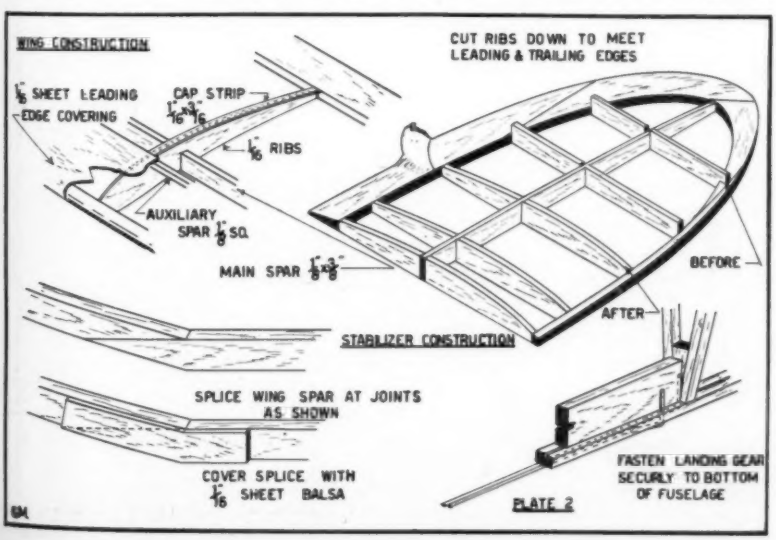
### Fuselage

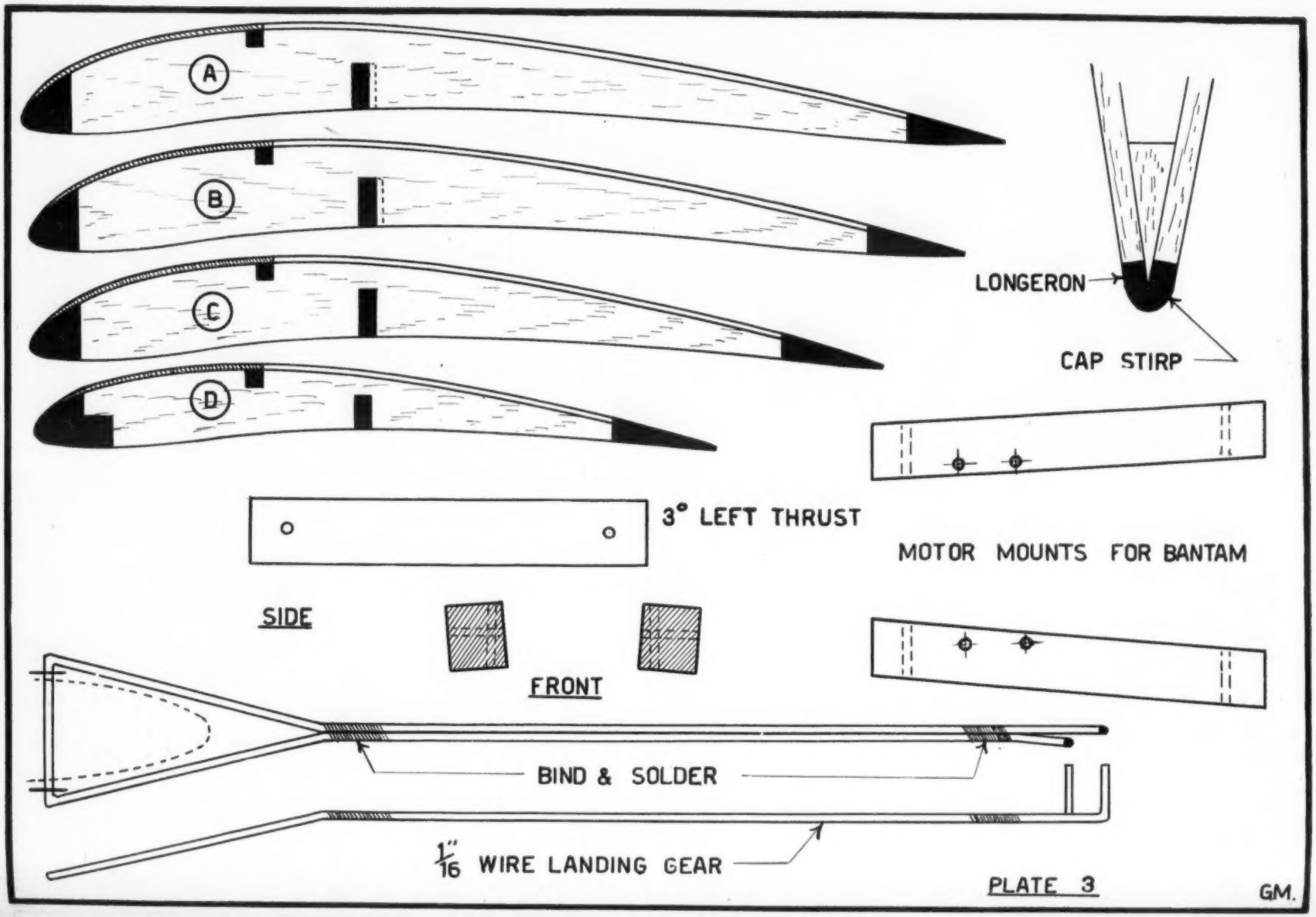
The entire fuselage is constructed of 3/16 inch square hard balsa wood, except where noted. The motor mount bearers are of pine wood or any hardwood. These are cemented to the bearer supports. The sheet balsa sides of the cowl can be built with each side. The front cowl block can be cemented into place after the fuselage sides are cemented together. Note that the top longeron is double where the wing rests on the fuselage. This is to prevent the fuselage from collapsing when put under strain. Assemble the fuselage by bluing the bottom longerons of each fuselage side together, and add cross braces between the top two longerons. Be sure that the angles on the cross braces are pretty near perfect, for this will greatly strengthen your fuselage.

After the two fuselage sides are glued together and have the right shape, add the front nose cowling. Details can be seen in the sketch.

The landing gear should now be bent to shape (as shown in the drawing) to fit the fuselage and to hold the wheel. (A 2 1/2 inch air wheel can be used.) The landing gear should then be attached to the fuselage as shown on the plans and bound with very strong thread. Several coats of glue over this would greatly add to its strength. The next step would be to turn the fuselage upside-down and sand the bottom of the

*(Continued on page 44)*


WING CONSTRUCTION
1/8 SHEET LEADING EDGE COVERING
CAP STRIP 1/16 x 3/16
1/16 RIBS
AUXILIARY SPAR 1/8 SQ.
MAIN SPAR 1/16 x 3/8
CUT RIBS DOWN TO MEET LEADING & TRAILING EDGES
BEFORE
AFTER
STABILIZER CONSTRUCTION
SPLICE WING SPAR AT JOINTS AS SHOWN
COVER SPLICE WITH 1/16 SHEET BALSA
FASTEN LANDING GEAR SECURLY TO BOTTOM OF FUSELAGE
PLATE 2


A
B
C
D
LONGERON
CAP STIRP
3° LEFT THRUST
MOTOR MOUNTS FOR BANTAM
SIDE
FRONT
BIND & SOLDER
1/16" WIRE LANDING GEAR
PLATE 3
GM.

# Fundamentals Of Model Plane Control

## How You Can Control the Flights of a Model Plane By Modifications of Specific Features of Design

**By CHARLES HAMPSON GRANT**

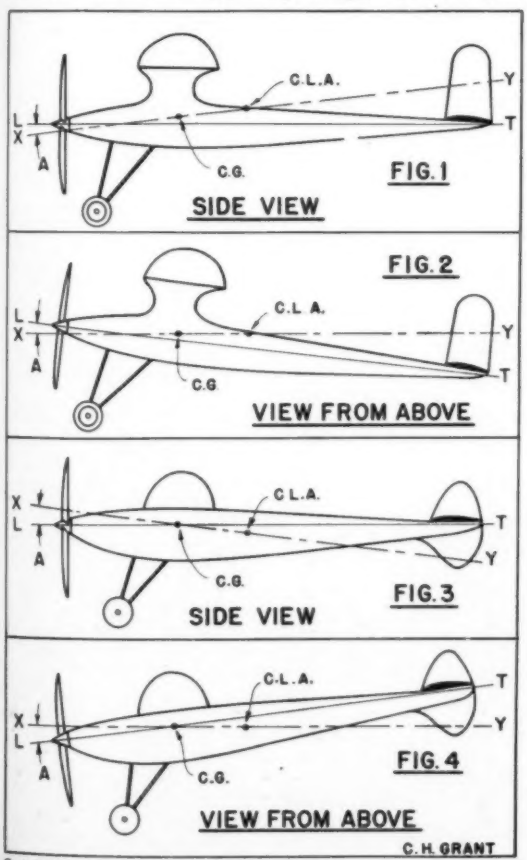
MANY model flyers win contests because they know how to control their models to a reasonable degree. The best designed model does not always win, for the design is only one of the contributing factors to successful flying; the other important one is the control of the plane. No doubt our readers have been to one or more of these contests; won by some fairly crude-looking square-rigged plane, not necessarily with stream lines and often obviously inefficient. Model fans are prone to attribute such successes to luck or "thermals."

However, most often the unseen cause for such successes is the ability of the model flyer to make his plane perform in the desired manner: for instance, he may wish a certain radius of circle and a definite angle of climb. Before the contest, if he is a good model flyer, he has test-flown his ship and adjusted it to perform in the exact manner desired. To do this often requires great patience and many hours of test flying.

At the present time to control planes so that they will fly in a specified manner, a flyer resorts to fixing the tail surfaces, the wings and the line of thrust at definite angles relative to one another. He may wish the plane to circle in a tight spiral to the left or to the right and occasionally he may wish a perfectly straight flight. Usually he has little trouble in attaining a climbing angle that he desires.

On the other hand it has been a most difficult problem to control planes directionally. Invariably when a turn has been desired, it has been either in too short a radius or it has not been sharp enough. When a performance has been executed with precision it usually has been because many test flights have been made to determine the exact adjustment. Of course the adjustment is different with various ships.

As far as straight flying is concerned this has been nearly impossible to attain when desired. When a straight flight has been made on particular occasions, it has usually been a matter of chance. It has been considered a miracle to make a model fly a straight course in gusty air or when a strong breeze is blowing unless of course it is flown down-wind. The average model responds to gusts in such a manner that it flies in any particular direction into which it is turned by turbulent air. Seldom does it resist such a placement from its straight flight course. Thus control of the model has been a more or less haphazard and unscientific procedure among model fliers.




Copyright 1940 by Charles Hampson Grant

Briefly the problem is to design or adjust your plane in such a manner that it will resist directional disturbances or react to turn against the disturbance and continue on its former course. This of course may be a circular one or a straight one.

To design a plane so that it will fly in a circle with a definite radius is most advantageous in contest flying. This may be done by designing the plane in a particular manner, and not merely because of response to settings of the control surfaces; but instead inherently resisting any force which tends to disturb it or turn it from the pre-determined flight course. The method is not obvious, but is quite simple to incorporate in your ship. It may be accomplished merely by the correct disposition of the lateral area of your model. Usually the desired effect can be obtained by the proper location of the fin area.

Basically, the reaction of your model depends upon the angle of the neutral axis of the lateral area. This passes through the center of gravity and through the center of lateral area. Thus it makes a definite angle with the thrust line or line of flight in any particular plane. Fig. No. 1 shows the neutral axis XY which forms an angle A with the line of thrust LT.

By varying the slant of XY relative to LT, the flight of models may be regulated with precision. As line XY is drawn through the center of gravity and the center of lateral area it becomes obvious that the relative position of these points determines the slant of the neutral axis.

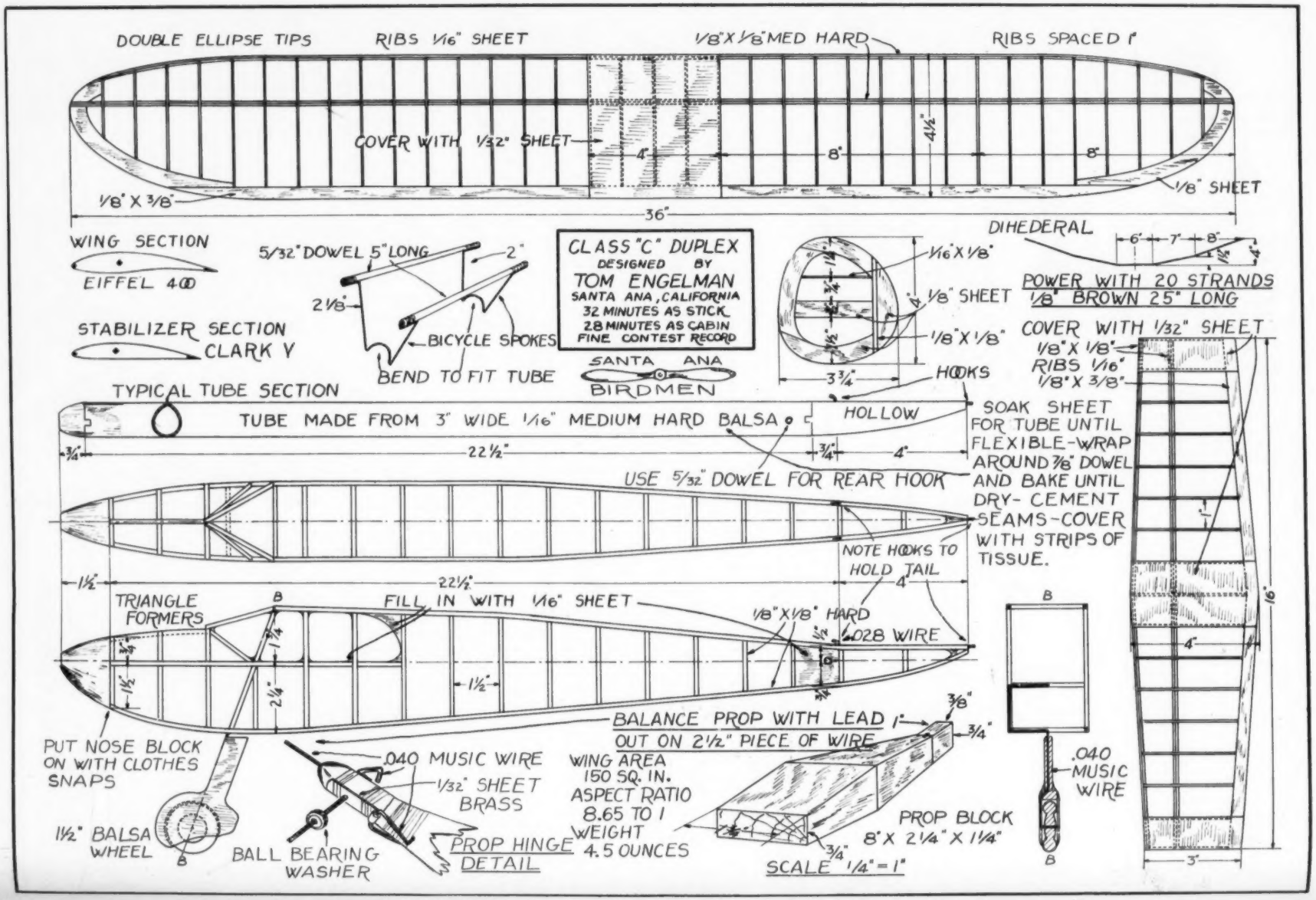
The higher the CLA is, relative to the CG, the greater negative slant XY will have. When the CLA is on a level with the CG, XY will be parallel to LT.

Perhaps readers who understand the significance of the position of the center lateral area will begin to see why the slant of the neutral axis has such bearing upon the performance of the model. The steeper the slant in this line, the tighter will be the circle which the model will naturally make when in full flight. If in your model the slant XY is steep, you may be sure that the model will circle sharply when in horizontal or slightly climbing flight. This will not hold true when the model is climbing at a greater angle than about 30 degrees, for then the turn will assume the semblance of a spiral climb. If the line XY is approximately parallel to the line of the thrust or has a positive slant, the model will tend to fly an approximately straight course. The ship will even resist turning induced by any sudden setting. For instance, on one particular model which was test flown, the rudder was set so the plane would turn to the left. This made absolutely no difference in the flying of the model for it resisted completely the rudder action. Regardless of how the rudder was turned, it would fly approximately straight. This phenomena existed entirely because the neutral axis was parallel or slightly positive to the thrust line.

In order to make this model turn, it was necessary to cut away the fin beneath the tail of the fuselage and place the area above the fuselage. This raised the center of lateral area and caused a slight negative inclination of XY. The model then responded to the rudder perfectly, making a normal wide circle. Apparently, this seems to be a very simple matter, yet up to this time, these facts have never been generally recognized or applied for this purpose.

By use of this feature any model may be designed for a desired and pre-determined

*(Continued on page 46)*


DOUBLE ELLIPSE TIPS
RIBS 1/16" SHEET
1/8"X1/8" MED HARD
RIBS SPACED 1"
COVER WITH 1/32" SHEET
4"
8"
4½"
8"
1/8" X 3/8"
1/8" SHEET
36"
WING SECTION
EIFFEL 400
5/32" DOWEL 5" LONG
2"
2⅛"
BICYCLE SPOKES
BEND TO FIT TUBE
CLASS "C" DUPLEX
DESIGNED BY
TOM ENGELMAN
SANTA ANA, CALIFORNIA
32 MINUTES AS STICK
28 MINUTES AS CABIN
FINE CONTEST RECORD
SANTA ANA
BIRDMEN
DIHEDERAL
6"
7"
8"
POWER WITH 20 STRANDS
1/8" BROWN 25" LONG
1/16"X1/8"
1/8" SHEET
1/8"X1/8"
HOOKS
3¾"
COVER WITH 1/32" SHEET
1/8"X1/8"
RIBS 1/16"
1/8"X 3/8"
STABILIZER SECTION
CLARK Y
TYPICAL TUBE SECTION
TUBE MADE FROM 3" WIDE 1/16" MEDIUM HARD BALSA
HOLLOW
SOAK SHEET FOR TUBE UNTIL FLEXIBLE-WRAP AROUND ⅞" DOWEL AND BAKE UNTIL DRY- CEMENT SEAMS-COVER WITH STRIPS OF TISSUE.
¾"
22½"
¾"
4"
USE 5/32" DOWEL FOR REAR HOOK
NOTE HOOKS TO HOLD TAIL
1½"
22½"
4"
TRIANGLE FORMERS
B
FILL IN WITH 1/16" SHEET
1/8"X1/8" HARD
.028 WIRE
1¼"
2¼"
1½"
1½"
BALANCE PROP WITH LEAD 1"
OUT ON 2½" PIECE OF WIRE
⅜"
¾"
PUT NOSE BLOCK ON WITH CLOTHES SNAPS
.040 MUSIC WIRE
1/32" SHEET BRASS
1½" BALSA WHEEL
B
BALL BEARING WASHER
PROP HINGE DETAIL
WING AREA 150 SQ. IN.
ASPECT RATIO 8.65 TO 1
WEIGHT 4.5 OUNCES
¾"
PROP BLOCK 8"X 2¼" X 1¼"
SCALE 1/4"=1"
B
.040 MUSIC WIRE
B
16"
4"
3"

# FRONTIERS

## Highlights of the Latest Developments in Aviation

## BY ROBERT C. MORRISON

THE aeronautical engineer must now, more than ever, become a realist. A new medium has entered into his process of design, an important one that will have priority over many of the other features of his airplane.

For many years our military pilots have flown rather peaceful airplanes on very peaceful missions in a more or less contented and casual manner. All their "battles" have been imaginary, and the U. S. Air Corps has put most emphasis on cruising range, high speed and maneuverability in the design of a military ship. There was one item that the aeronautical engineer seldom considered at all, and that was the use of the airplane in actual combat. The air corps pilot is no longer faced with battling the "little man that isn't there," but he has good chances of meeting up with the true-blue, real thing. Though he is now cruising through the air in luxurious bombers, there is a remote possibility that his pleasures may be mixed with enemy bullets.

Therefore, the U. S. Army Air Corps has decided that the aeronautical engineer should chop off a slice of his time devoted to theory and utilize it in thinking of means and ways of making his airplanes withstanding the onslaught of enemy shells and bullets with added protection for the crews.

Our "peaceful" war weapons of the air are a far cry from the accomplishments that are possible in the near future in making the airplanes "bullet-proof." Speed, of course, is one good way of making a plane "bullet-proof" providing there is enough of it to keep away from the enemy plane. But when an interceptor pilot is going "slam-bang" into an enemy bomber's gun-fire the story is different. No normal person would cherish the idea of doing thus unless he had plenty of sheltering steel up forward, or the other alternative . . . unless he was fresh out of a "laughing academy." So many other things can happen than the pilot just being hit by bullets, too. A bullet may pierce a rib bordering one of the wing integral fuel tanks. The gasoline itself may quench the red-hot piece of steel, but then the gas may leak out and fumes will surge into the hollow structure of the wing and when the next bullet shows its passport and starts the trip through, an explosion will be the order of things and the pilot will be lucky to have arms and legs, let alone an airplane.

A gunner encased in glass in a turret at some part of the airplane which we might designate as "Exhibit A" would fret and turn green at the thought of having to remain there, crouched with no place to hide, while a Messerschmitt pumped bullets at him. If he was a navy gunner, that battleship tattooed on his

*(Continued on page 62)*

Army's latest primary trainer, the Fairchild PT-19. (175 hp. Ranger)

The 350 m.p.h. Grumman fighter built for the British Navy

(Third from top) American-made Vought dive-bomber which was captured from the French by the Germans and used against Britain

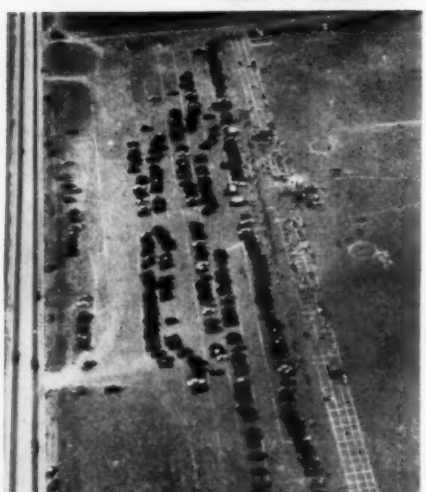
The new 450 m.p.h. Bell XFL-1 pursuit fighter, "Airabonita," built for the U. S. Navy. A 37-millimeter cannon fires from the nose. One of the most deadly planes in existence

The Caproni Ca.134, Italian 2-seat reconnaissance plane. It has a biplane tail with twin rudders. The gunner fires from the rear cockpit

The deBothezat Helicopter which recently made a successful flight

Pitcairn military autogiro clears a 17 ft. obstacle. (Acme)

Pict. No. 1. S. Kostenich and his unique ship



# GAS LINES

## IMPORTANT EDITORIAL

### Highlights of Gas Model Activities Throughout the World – Reports of Contests –

Editorial

"THE Phantom" is abroad again!!

He has appeared on a number of occasions during the past years, popping up in one place or another throughout the country, spreading his iniquitous philosophy of selfishness and intrigue. His technique is not unusual—he lulls the spirit, initiative and sense of responsibility of unsuspecting model builders into a state of unconsciousness, with the object of making them slaves to some centralized, mighty force which directs their every action as a child's.

Pict. 4. Clem Gelzunas' gas model has a transparent wing mount for easy inspection

Pict. 5. The Southern Cal. G.M.A.A. Contest, Aug. 24-25th, in full swing

Pict. 6. Frank Cummings who won 1st place in the daylight contest

Probably you will wonder what this has to do with model aeronautics, but those who have been in this fascinating game for sometime will remember that a number of years ago a would-be leader in a high position and with great power, abused the privilege of possessing power and tried to dictate what model builders should do, and thus rob them of their right to govern themselves.

Today this same question again arises —will the model builders have to "jump" to the "tootings" of a dictator or are they big enough, strong enough and determined enough to run their own show?

This issue has arisen on a number of occasions lately. There has been some whispering to the effect that it is not necessary or desirable to get an Academy of Model Aeronautics sanction to run contests—the model builder should be "free." "They" put this forward as a bait for model builders to seek self-determination and apparently glorious self-expression at the expense of the whole model organization which has been built up throughout the country. This leads to but one thing: disintegration of the entire model hobby and industry.

"They" fail to tell you that being "free" also carries with it the necessity to assume a responsibility; the price one pays for freedom. Strange to say, as soon as this responsibility is thrown off model builders cease to be free for someone immediately steps in to run the show. This is exactly what will happen unless model enthusiasts assume the initiative and strengthen the organization which they have so laboriously start-

Pict. 7. Mel Anderson and Ray Acord who tied to a split second

Pict. 8. Gail Currie and his scale Vultee

Pict. 2. R. J. Moderson Jr. and "low-wing" (Queens City contest)

Pict. 3. Frank Jakubek and his winning gull-wing amphibian

ed—the Academy.

It boils down to the simple fact that model builders will uphold this organization, the Academy of Model Aeronautics, which fights all forces which tend to disrupt model aviation and deprive the model builder of his self-rule, or the whole model game will be taken over by the government or some other dictatorial body: a body in which the model builder will have no say whatsoever but will follow blindly the rulings of this new authority: rulings of people who are not familiar with model aeronautics, having had little experience in this field, yet because of their position have the audacity to mistake knowledge in one field for knowledge in another.

It is up to the model builder to make his choice. If he is strong, he will have the initiative and determination to take action and protect model aviation through the Academy and will not step back and have others run his show for him; for it is inevitable that if one does not run his own show somebody else will.

The price that modelists pay for organization and protection against forces which desire to disrupt and get control of model aviation is the assumption of certain responsibilities; the necessity of living up to flight rules, of flying in a safe and sane manner, of not taking chances with other people's property or infringing upon their rights in the course of their participation in any phase of the sport.

The Academy has been chosen as an instrument of the model builder, one in which he has a chance to take active part and through which he may make his will felt. Because those with initiative have done this, others have no right to feel they are being dictated to, for because it is through their own lack of initiative the Academy hasn't had the benefit of their association and ideas.

In brief words the issue is this: Either we organize as a self-respecting and self-governing body and continue to be organized; or disintegrate into a mob, each individual endeavoring to make his own, particular, little will felt. This latter naturally results only in confusion and chaos; a situation ripe for some outside force, body or personality to intercede: a condition which will induce governmental control or the establishment of some kind of dictatorship in the model field. It goes without saying that under this condition modelers will go through the process of flying

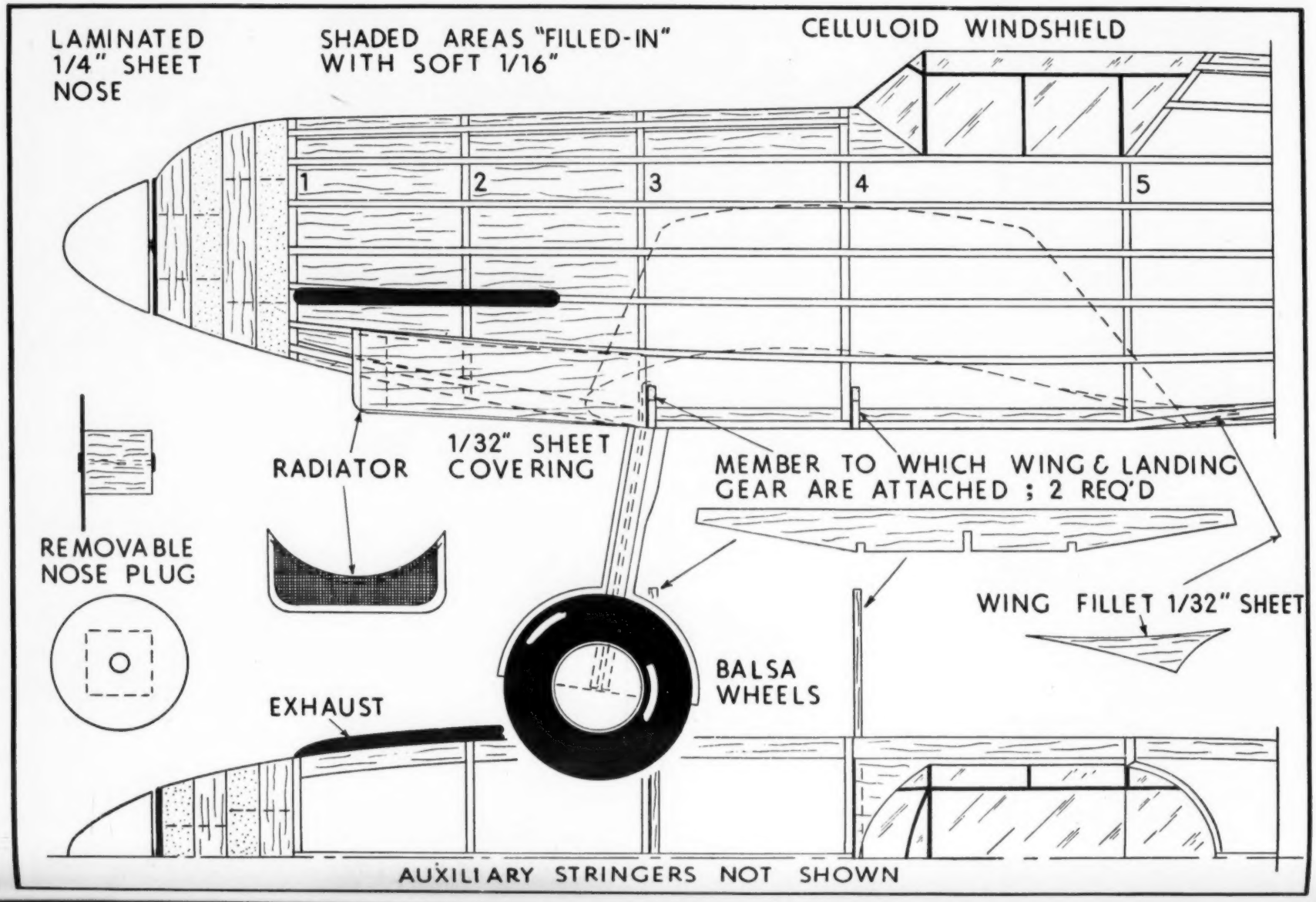
*(Continued on page 34)*

Pict. 12. He's at it again! Maxwell Bassett and his radio job

Pict. 11. A group of members of the Louisville Model Airplane Club and their planes

Pict. 9. John Brodbeck, 1st place winner in the night events

Pict. 10. Ted Gellett, J. Williams, E. Newcomb; Class C winners


LAMINATED 1/4" SHEET NOSE
SHADED AREAS "FILLED-IN" WITH SOFT 1/16"
CELLULOID WINDSHIELD
1
2
3
4
5
1/32" SHEET COVERING
RADIATOR
MEMBER TO WHICH WING & LANDING GEAR ARE ATTACHED ; 2 REQ'D
REMOVABLE NOSE PLUG
WING FILLET 1/32" SHEET
BALSA WHEELS
EXHAUST
AUXILIARY STRINGERS NOT SHOWN

Carefully designed for flight yet realistic in appearance

The sleek lines and large propeller give it flight efficiency

# A Flying Messerschmitt Pursuit

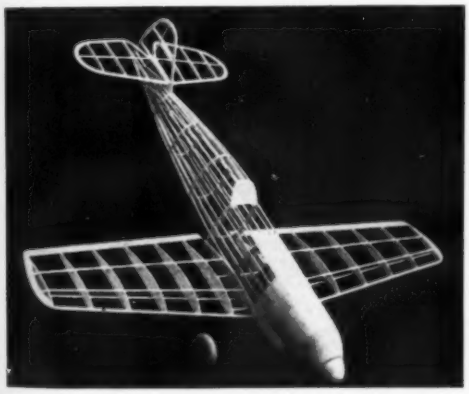
## A Realistic Scale Model With Remarkable Flight Qualities of a World Famous Plane —How You Can Build It

**By EARL STAHL**

FOREMOST fighting plane of Germany's potent air force is the deadly Messerschmitt Me-109, a single-place, low-wing monoplane of all-metal construction. In general the design of this fighter presents a remarkable contrast to Britain's equally famous "Spitfire," subject of our flying scale article in the August 1940 issue of MODEL AIRPLANE NEWS. Somewhat smaller in size, the Me-109 is not characterized by the smooth, graceful lines of the "Spitfire," but rather by stub wing tips, an externally braced empennage, and general lack of refinement, which is apparently the result of volume construction.

When powered by a Daimler-Benz engine of 1050 h.p., a maximum speed of 354 m.p.h. is attained; which compares favorably with the "Spitfire's" 357 m.p.h. However, one of the greatest assets of a pursuit ship, maeuverability, is apparently lacking. Reports from the "front" indicate that superior maneuverability of the British "Hurricanes" and "Spitfires" has proved to be the decisive factor in many encounters with the Messerschmitts. In France, the American-built Curtiss Hawk, while somewhat slower, was especially effective against its less maneuverable foe.

Various combinations of armament have been found on planes that were shot down. Some planes have as many as eight machine guns while others employ an aerial cannon in combination with several guns. An armor protected cockpit and self-sealing fuel tanks afford a degree of protection for the pilot.



Light and carefully detailed construction

Your fleet of models will not be complete without a miniature Messerschmitt Me-109. The plans which accompany this article will enable you to construct an attractive, authentic model with a minimum of labor. Flight performance of the model shown in the photographs is remarkable for this type plane, for despite the low-wing, pursuit design, the model has made many stable, realistic flights—and it has never crashed. Standard construction methods are used throughout. However, it is advisable to thoroughly study the plans and instructions before starting to build.

### Fuselage

Construction is begun with the fuselage. Trace the top, bottom and side outlines of the fuselage on a sheet of paper to obtain the correct shape of the keel pieces. Lightly cement the paper patterns to a sheet of medium-grade 1/16" sheet and then use a sharp razor blade to cut them out. Bulkheads also are cut from 1/16" sheet; cut only those notches shown, others are marked but they are cut later as needed. Pin the top and bottom keel pieces over the side view and cement half of the bulkheads to their respective positions. It will be noticed that bulkhead No. 5 is cut and then recemented at the angle shown. Attach one of the side keels after making certain that the bulkheads are aligned correctly. Remove this portion of the body from the plan and place the remaining bulkheads and the other side keel. Stringers are light-grade 1/16" square strips. As the work progresses, it will be necessary to cut many of the notches for the stringers; use a razor

*(Continued on page 66)*

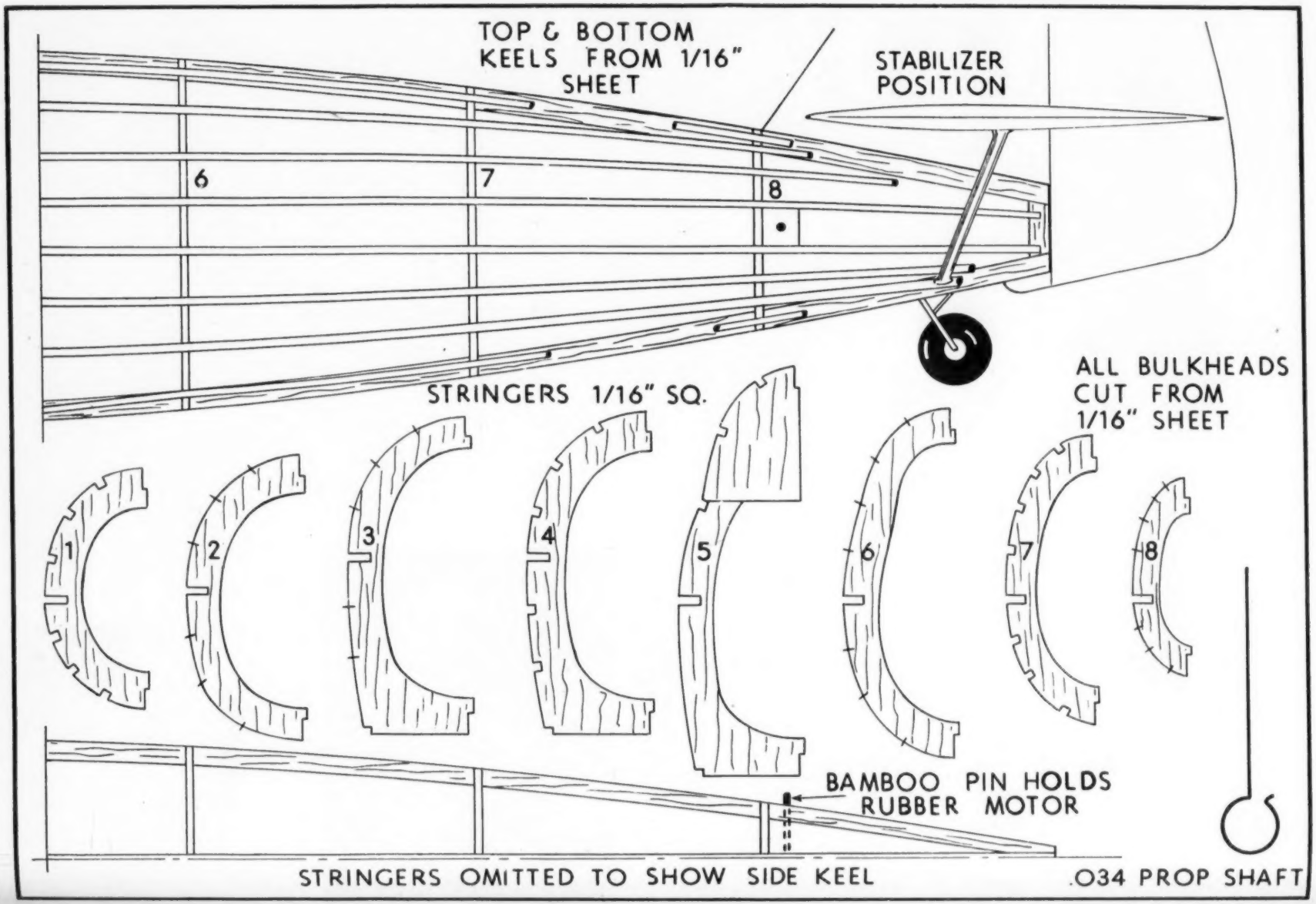
In full flight, "going places"

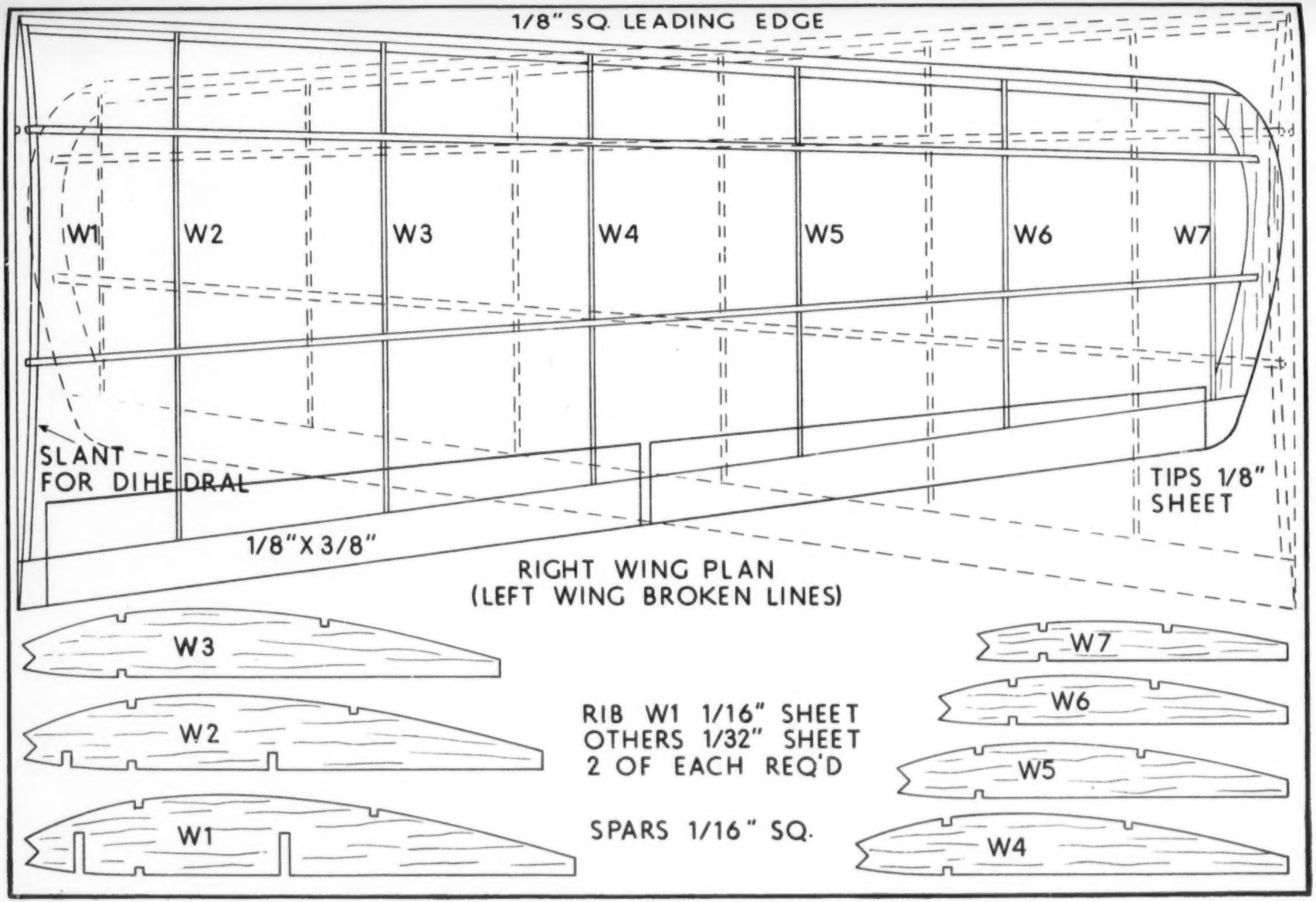
It banks with precision

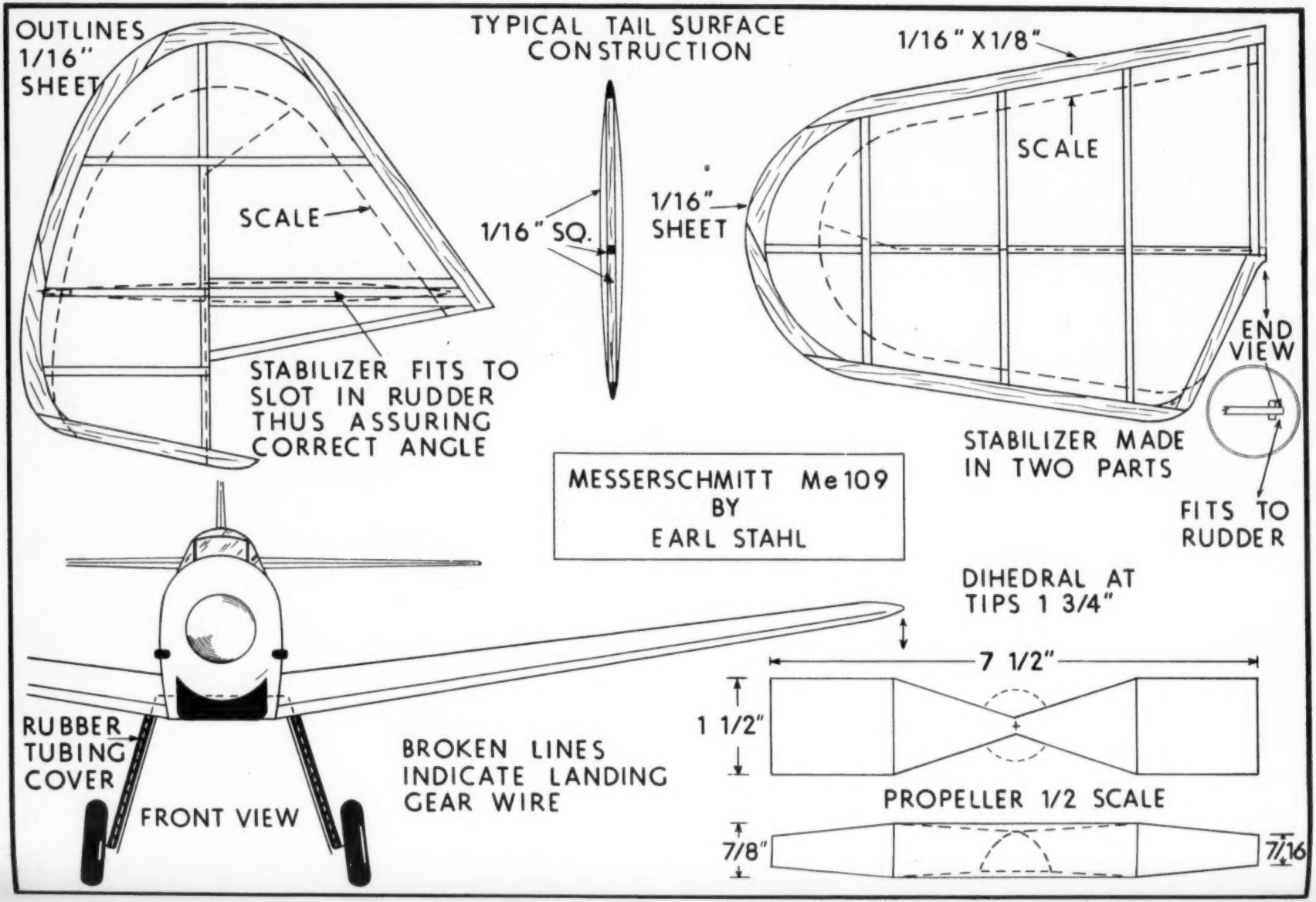
Climbing like a full scale ship



AUXILIARY STRINGERS NOT SHOWN


TOP & BOTTOM KEELS FROM 1/16" SHEET
STABILIZER POSITION
6
7
8
STRINGERS 1/16" SQ.
ALL BULKHEADS CUT FROM 1/16" SHEET
1
2
3
4
5
6
7
8
BAMBOO PIN HOLDS RUBBER MOTOR
STRINGERS OMITTED TO SHOW SIDE KEEL
.034 PROP SHAFT


1/8" SQ. LEADING EDGE
W1
W2
W3
W4
W5
W6
W7
SLANT FOR DIHEDRAL
1/8"X 3/8"
TIPS 1/8" SHEET
RIGHT WING PLAN
(LEFT WING BROKEN LINES)
W3
W2
W1
RIB W1 1/16" SHEET
OTHERS 1/32" SHEET
2 OF EACH REQ'D
SPARS 1/16" SQ.
W7
W6
W5
W4


OUTLINES 1/16" SHEET
SCALE
STABILIZER FITS TO SLOT IN RUDDER THUS ASSURING CORRECT ANGLE
TYPICAL TAIL SURFACE CONSTRUCTION
1/16" SQ.
1/16" SHEET
1/16" X 1/8"
SCALE
END VIEW
STABILIZER MADE IN TWO PARTS
FITS TO RUDDER
MESSERSCHMITT Me 109
BY
EARL STAHL
DIHEDRAL AT TIPS 1 3/4"
7 1/2"
1 1/2"
PROPELLER 1/2 SCALE
7/8"
7/16
RUBBER TUBING COVER
FRONT VIEW
BROKEN LINES INDICATE LANDING GEAR WIRE

# Designing Gas Models For Performance

## PART 3

### How to Determine the Wing Lift and the Correct Airfoil Section to Suit Your Purpose

**By LEO A. WEISS**

IN THE previous two articles, the process of performance calculation of models has been presented, with special emphasis on the simplicity of computations. By following the short outline at the beginning of article No. 1, and Fig. 9 of article No. 2, no trouble at all should be encountered.

Of course, what has been presented is by no means a complete treatise on model performance. Remember, however, that the purpose in presenting performance first is to assist in designing models later on. It will be noticed in this article that the performance analysis is correlated closely with gas model design.

Any one who has built models knows that a wing develops a certain amount of lift as it is moved through the air; though not many know just what is the relationship between this lift force and the velocity, area of the wing or shape of the wing. This relationship is known as the fundamental Aerodynamic equation. It is: Lift = K S $V^2$, or more completely, Lift = $C_L \frac{\rho}{2}$ S $V^2$. The explanation of this is quite simple. It merely means that the lift force is proportional to the area, S, in square feet, and to the square of the Velocity, V, expressed in feet per second, multiplied by a constant, K. K, it is seen, is equal to $C_L \frac{\rho}{2}$.

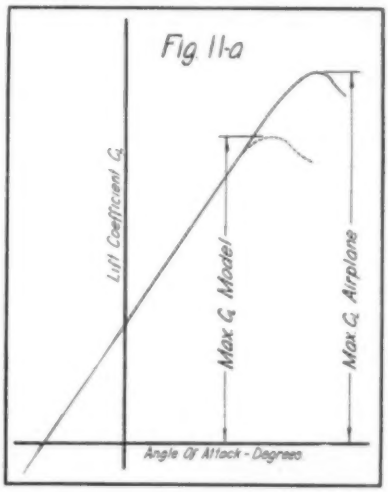
$C_L$, known as the lift coefficient, is of course familiar to all model builders. However, $\rho$ should be a new quantity to most. It is a Greek letter, pronounced "rho." It is merely representative of the density of air. This is practically a constant, since it varies but slightly with ordinary temperatures, but does vary considerably with altitude. Since the altitudes attained by gas models are as a rule quite low, we will assume the sea level value for the density as remaining constant. Therefore, for model work: Lift = 0.00256 $C_L$ S $V^2$, where V is now expressed in miles per hour. This is a very widely used formula.

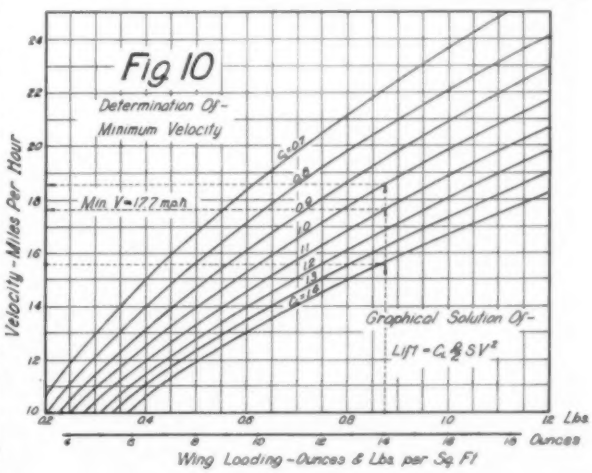
Now consider an airplane flying either in level, climbing or gliding flight. Naturally, the lift equals the weight, otherwise the airplane would accelerate either up or down. From elementary physics this is seen readily, for if the forces on a body are not in equilibrium, the body will accelerate.

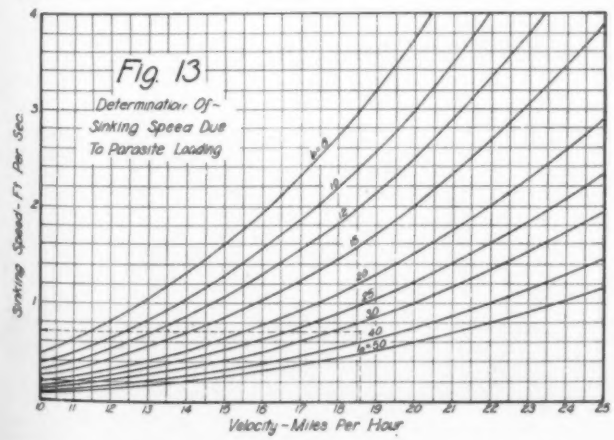
Going back to our aerodynamic equation, and placing the lift equal to the weight, we get: W = .00256 $C_L$ S $V^2$, or by a simple transposition, $\frac{W}{S}$ = .00256 $C_L$ $V^2$. Thus we have a simple relationship between the WING LOADING, or $\frac{W}{S}$, and the lift coefficient and airspeed. Now naturally, the wing loading of an airplane is a constant. It is either eight ounces per square foot, or ten ounces, or some other figure, but it does not vary. Thus, there are only two variables in this equation which has been developed, not empirically, but by pure theory. Since $C_L$ and V are the only two variables, knowing one, we can find the other.

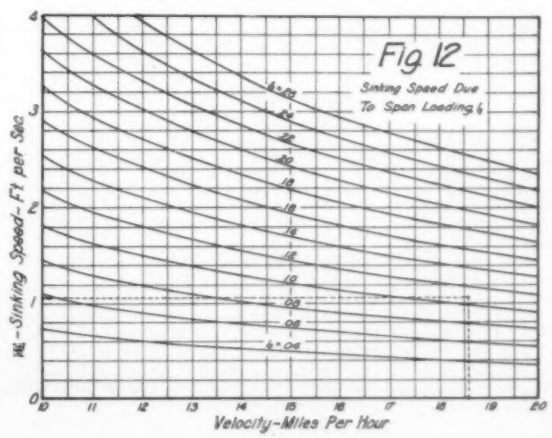
To date, it has not been necessary to substitute actual numbers into formulas, except the simple ones in article No. 1, to obtain $l_a$, $l_t$ and $l_p$. Continuing with this idea, Fig. 10 is a graphical solution of the aerodynamic equation, with scales arranged for proper units. Notice that the wing loading scales are in both pounds and ounces per square foot, to

*(Cont'd on page 52)*



Pict. 1. Joe Bashore launches his Moffett entry at Nationals

# Air Ways

## News of Models and Modelers and What They Are Doing to Increase Their Knowledge of Aviation

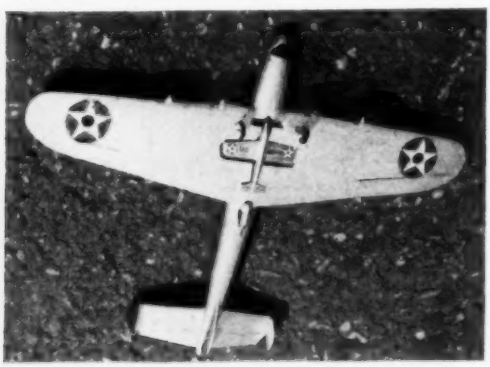
THIS has been a year of competitions—every kind imaginable has been held during the past season. They have included original contests for gas models, rubber models, or both, a National Competition, club contests, exhibition flying where large groups of people have gathered, (such as at the N.Y. World's Fair) and scale and flying model exhibitions.

This great increase in activity throughout the whole country has been coincident with the reorganization of the Academy of Model Aeronautics and the establishment of a set of rules with which the majority of model builders have expressed great satisfaction. It is logical to assume that this great increase of activity has been largely due to the activities of the Academy under the energetic leadership of Mr. Albert Lewis and his able assistant, Mr. Bruno Marchi. To these two young men great credit is due. Taking care of the many details involved and promoting satisfaction among various units with conflicting ideas is no simple task. To appreciate the difficulties, one has only to place himself in the position of an Academy director and imagine the duties which must be faced.

All of this serves as an excellent example of what cooperation and organization among model builders can accomplish for the good of everyone.

Occasionally dissenters disdain to work with a group for one common purpose, but endeavor to show their individuality and gain personal publicity by making assertions against the organization the model builders have established—the Academy. The motive which usually prompts such action is a selfish one rather than a feeling of working for the good of modelists as a whole. We appeal to all fans with the good of model aviation at heart, and for their own ultimate benefit, to take part in A.M.A. activities; to get behind the organization, make it their own and help it to grow in the right direction.

This year the largest National Competition of all times was held in Chicago. An interesting picture, No. 1, has just come to us of the youngest contestant there, Joe Bashore. He is shown in the act of launching his



Pict. 4. A unique entry in the Original Design Event; a bomber that carries a "pursuit"

Pict. 5. A model attacks balloons in the balloon-bursting contest at the World's Fair on Air Youth Day

Pict. 6. Joe Walsh with his beautiful soaring type model. The aspect ratio is 15

Here is a panoramic view of the Sky Blazers Model Plane Exposition at the N.Y. World's Fair.

Pict. 2. Teed Westlake's Seversky P-35 and trophies it has won

Pict. 3. A beautiful balsa flying scale Vultee Vanguard

Moffett entry. From its appearance the little plane is worthy of more mature craftsmanship. Incidentally, Joe was winner of the Class C Gas Event for Juniors. You may expect to hear more from him in future contests.

One of the largest, if not *the* largest, model exhibitions ever held was the Sky Blazers Model Aircraft Exposition, sponsored by the makers of Wonder Bread, and held at the New York World's Fair on July 31st. It was directed by Mr. Irwin Polk, business manager of the 1938-1939 Nationals, who is well-known among model builders. About 500 model airplanes, ranging in size from one which fitted in a matchbox hangar to some having a wing span of 15 ft., were entered.

There were seven events in all: Three were for exhibition models of wing span not over 16 inches, 16 to 30 inches and 30 inches or over. The three events for powered models were for Classes A, B and C. The seventh event was a design contest in which builders endeavored to present their ideas for the airplane of the future.

There were three age divisions in each event and handsome trophies topped with a miniature of Roscoe Turner's racer were given to winners of first and second place, while medals were given to third place winners.

A colossal job of scoring and judging the models fell upon the Technical Committee of ten, headed by Charles Grant, editor of MODEL AIRPLANE NEWS and consisting of William Winter, editor of "Air Trails"; Larry Isenger, model airplane editor of Model Craftsman magazine; Joseph Battaglia, Louis Garami, Mario DeBenedeill, noted model expert and champion; Arthur Vhay, technical director of Air Youth of America; Al Young, secretary and treasurer of the Metropolitan Model Airplane Council Inc.; Felix Gilbert, model expert and industrial designer, and Nathan Polk.

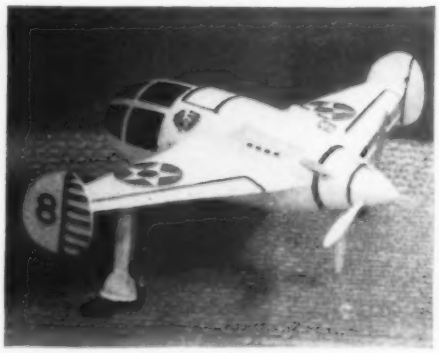
Of particular interest was the model submitted by Henry Portz of Springfield, Ohio. His entry was a 1939 Turner-Laird which had excellent details even to having a carved figure of Roscoe Turner. His entry earned him 96 points. Another exceptionally fine model, and one which received the highest score of any model entered, was submitted by Peter Zeieski of Cleveland. His Boeing P-26A was as nearly perfect as a model could be and received 97 points.

An interesting highlight in one of the events was the entries of Teed Westlake and Carl Baum, both residing at Joyne Avenue, Patchogue, New York, who both entered Seversky P-35's and whose models were both so well done that it took the judges considerable time to decide between them. After much deliberation Westlake's

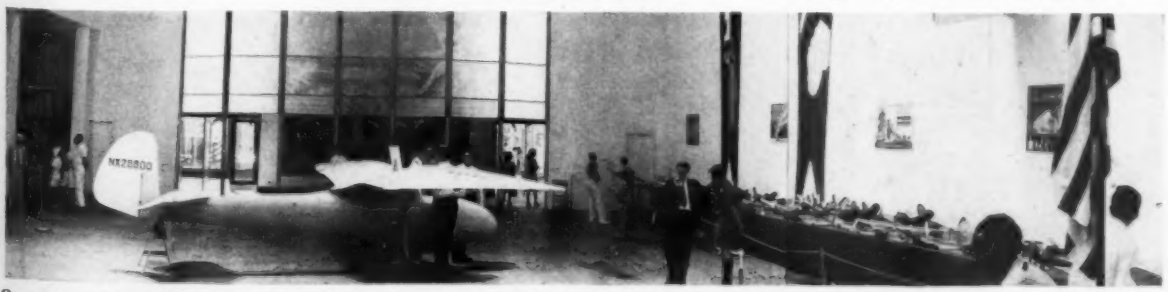
*(Continued on page 56)*

Pict. 9. A realistic Waco model by Paul Marchal

Pict. 7. Dr. Ray Podalsky of St. Louis receives the Stix, Baer & Fuller Grand Award



Pict. 8. Leonard Malott, winner of the M.A.N. Originality Contest for this month



Over 500 models of all types were on display. Trophies were awarded to winners in each class.

# Academy Of Model Aeronautics

**A Division of the National Aeronautic Association**

**OFFICIAL MODEL AIRPLANE NEWS FROM ALL PARTS OF THE WORLD**

SUPPORT A.M.A. PROGRAM **FLY SAFELY**

### Fly Your Model Safely Under A.M.A. License

A PROGRAM to bring to the attention of every active aeromodeler in America the desirability and necessity for following the official governing regulations at all times has been launched by the Academy of Model Aeronautics. In a statement released by A.M.A. headquarters in Washington, the organization called upon every one of its clubs and leaders to "educate" all those not yet affiliated with the A.M.A. to the crying need for everyone flying his model aircraft under the safety-first commonsense regulations set up by the Academy.

This publication is glad to take this opportunity to endorse the safety program of the Academy, and urges that every aeromodeler subscribe to the principles contained in the flyer's pledge to the Academy and secure an Academy sporting license.

Unless everyone gets together behind this program, it is quite possible that model flying and especially that of gasoline engine powered craft might be seriously curtailed through government regulation. The following is the original statement prepared by the Academy and sent to key leaders and chapters throughout the United States:

There is an apparent effort on the part of a few individuals, either envious of the progress of the Academy of Model Aeronautics or apprehensive of the model builders' ability to govern themselves through the Academy, to interest local, state, and government officials in regulating model aircraft activity.

We are not concerned with whether or not this could be done effectively since we feel, as we are sure you do, that the present set-up of private regulation is the best and provides the greatest opportunities for the enthusiast. What does disturb us is the fact that anyone should want to tear down what has been built up to the present high level of activity.

We pass this information along to you, not with the idea of alarming you or attempting to yell "Fire" when all of us working together can very quickly extinguish this flicker, but to enlist your aid in an effort to extend the Academy of Model Aeronautics' safety campaign to every model group in this country.

It is highly desirous at this time to point out that the Academy gas model flyer's license, which is now required for entrance in officially sanctioned meets, was originally established, not as a competition measure, but, instead, as a safety measure. At a time when the future of gas modeling was seriously jeopardized by the lack of common sense regulations to govern such activity, the National Aeronautic Association started its gas model licensing plan as a continuance of the I.G.M.A.A. organization at the request of numerous aviation authorities who, before banning gas modeling, wanted to see if the gas model flyer could regulate himself with the assistance of a national organization such as N.A.A.

This has been done most successfully. For that reason thousands of enthusiasts throughout the country are today enjoying the privileges and fun of gas model competition AND SPORT FLYING.

The time has come for the leaders of American model aviation to renew their campaign of safety in model flying. The principles of safety are already ingrained in the Academy's program and subscribed to by Academy chapters and licensed flyers. The need, rather, is to insist that new recruits in the field and those who are not yet familiar with the Academy's regulations conduct their activities with regard to others—in short, fly their models in open territory, away from spectators, and away from State and Federal airways.

That is the issue. The outcome of the Academy's program will largely determine whether or not gas models will be flown under private regulations or restrictive federal regulations. If model aviation is to be kept of, by, and for the model builder every model flyer should adhere to the A.M.A. regulations. We must sell the A.M.A. rules to every model flyer. The responsibility is yours! Are you going to do you part?

**ACADEMY OF MODEL AERONAUTICS**

*A Division of the National Aeronautic Association*

WILLARD HOTEL ★ ★ ★ WASHINGTON, D. C.

**RECEIPT OF LICENSE APPLICATION AND FEE**

(A Statement Regarding Model Flyer's Standing—For use by officials at A.M.A. Sanctioned Meets for the purpose of accepting Rubber or Gas License Applications and Fees from non-licensed flyers. This receipt to be held by contestant.)

Date.....

*This is to certify that*

Flyer's Name ..... Age.....

Address ..... —SPECIMEN—

City ..... State.....

has presented application for A.M.A. Model Flyer's Annual License, together with the required license fee of $....., and that in accordance with authority vested under the terms of the sanction of the:

(Name of Meet) ..... Contest,

the undersigned official has accepted this license application and fee for forwarding to the Contest Board of the Academy at national headquarters in Washington.

Director's Name .....

Address .....

City ..... State.....

This statement properly signed will be accepted for a period of not more than two (2) weeks from date of issuance by officials of meets sanctioned by the A.M.A. in lieu of the required license and pending issuance of the flyer's license from Academy headquarters.

This form is to be issued only by directors and/or A.M.A. representatives of sanctioned meets to model builders and flyers who present applications and correct fees for A.M.A. flyer's license (either rubber at 50c, or gas at $1.00).

### Receipt Forms for Applications Accepted at Contests

A new receipt form has been developed by Academy officials for use by contest directors at sanctioned competitions. In many instances, contestants will show up at a meet who do not hold a flyer's license. Rather than to bar them entirely from the competition, it is now possible for an A.M.A. representative to accept a rubber or gas model application filled out on the field together with the proper fee for forwarding to Academy headquarters.

The modeler making the application is given this new receipt form, which he can use for the period required for his credentials to reach him should he desire to enter other official competitions. A reduced size copy of the new form appears on this page.

### Renewal of Flyers Licenses

The question occasionally arises in the minds of licensed rubber and gas model flyers just how to go about renewing their sporting permit when it expires. The best way to do this is to secure a rubber or gas model license application (whichever the case may be) and fill it out completely, indicating that it is a renewal; and in the case of gas models, listing the number the flyer has held during the past twelve months. This should then be sent to Academy headquarters with the proper fee.

If credentials are desired in a hurry

*(Continued on page 68)*

The new Republic "Guardsman" fighter which carries 1350 lbs. of bombs and three machine guns: The world's fastest and most heavily armed two-seater. (See Frontiers) (Globe)

# FLASH-NEWS

## SPECIAL TO MODEL AIRPLANE NEWS:

ARMY:—The U. S. War Department's National Defense procurement program is well under way although it is still far from going full speed. Rumors continue rife that a total of 6,747 warplanes are on order but confirmed figures indicate a total of 2,677 actually contracted for including: 410 Lockheed P-38 twin-engine interceptors at a cost of $30,278,787; 277 Boeing B-17D four-motored "Flying Fortress" bombers at a cost of $70,449,955; 337 Stearman PT-13B bi-plane primary trainers at a cost of $2,041,947.97; 67 Beechcraft F-2 twin-engine photograph planes at a cost of $3,410,746.92; 150 twin-engine "transition" trainers and 20 twin-engine transport monoplanes at a cost of $4,847,217; 700 North American AT-6 monoplane advanced trainers at a cost of $11,335,631; 256 Ryan PT-16 light primary trainers at a cost of $2,021,440; and 460 Vultee BT-13 monoplane basic trainers at a cost of $7,541,576.

In addition, combined U. S. Army-Navy contracts have been awarded to: Pratt & Whitney Division of United Aircraft for 17,000 nine and eighteen-cylinder radial air-cooled motors ranging in horsepower from 550 to 2,000 at a cost of $160,000,000; Wright Aeronautical Corporation for 20,000 nine and eighteen-cylinder radial air-cooled motors in the same horsepower range at a cost of $180,000,000; and to Curtiss Propeller Division of Curtiss-Wright Corporation for 14,000 two and three-bladed electrically-controlled propellers the price of which has been included in the Wright engine contract.

Ryan Aeronautical Corporation has received a contract at a cost of $1,000,000 to train 1,350 air cadets within the current fiscal year.

To handle the order, Pratt & Whitney will spend $2,500,000 of their own money for plant expansion and $7,000,000 of the Navy's money for tooling, title to which the Navy will retain.

Captain George E. Price of the United States Army Air Corps' test section was awarded the Distinguished Flying Cross recently for his action in landing safely an experimental P-40 single seat Curtiss pursuit plane after his landing gear failed to function in a test flight over the Buffalo firm's plant. There was little or no damage done to the ship due to Price's coolness and skill and represented a great saving to the air corps, for the ship was the culmination of two years of research work.

Fifty army air corps officers, with an additional 25 scheduled, are now enrolled in California's famed Institute of Technology Meteorological School. After the success of Hitler's "blitzkrieg" tactics in which weather forecasting played such an important part, our air corps is augmenting its weather prognosticating department.

The air corps' largest anti-aircraft school is being constructed near Riverside, California's huge March Field. Two complete artillery regiments will undergo extensive training in aerial "pot-shoting." More than 3,500 men will work in cooperation with the 19th Bombing Group from March Field.

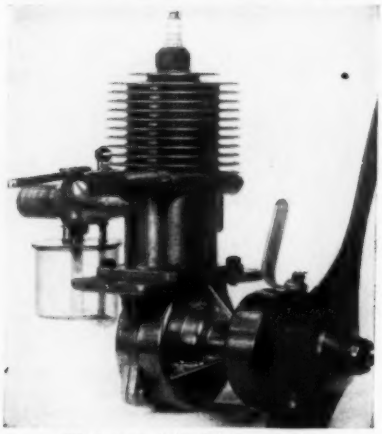
As a prelude to intensive National Defense training speed-up program, sixteen U. S. Army Air Corps officers and enlisted men have lost their lives in tactical training accidents, while eight others narrowly escaped death. Nine men in the crew of a Douglas B-18A twin-engine medium bomber were blown to bits when their ship was struck by lightning and exploded 23 miles southeast of Denver's Air Corps Technical School. The ship was on a practice bombing flight with more than 300 gallons of gasoline and a ton of bombs aboard. Four army flyers were killed in the crash of a Martin B-12 twin-engine medium bomber near Barksdale Field, Shreveport, Louisiana. The motors exploded when the ship struck and burned the entire ship and crew. Lieutenant Carroll C. Ferris was lost in his tiny Boeing P-26A "Peashooter" while on a practice flight from Wheeler Field, Honolulu. Attached to the 78th Pursuit Squadron, Ferris is believed to have lost his way and crashed either into the Oahu Mountains or into the sea. Flying Cadet John A. Slaughter lost his life in the crash of a tiny Ryan PT-16 low-wing training plane near the firm's San Diego flying headquarters. Lieutenant Laurence E. Wernberg lost his life when his brand new Vultee BT-13 monoplane, which he was ferrying from the Downey, California, factory to Kelly Field, Texas, struck a power line over Hoover Dam's Lake Mead and crashed into the water. The eight-man crew of a Douglas B-18A bomber parachuted to safety near McChord Field, Tacoma, Washington, when the ship's motors failed in a heavy storm. The abandoned bomber was demolished in

*(Continued on page 70)*

Here's the new Vultee Vanguard trainer with a 450 h.p. Wasp Jr. engine. Except for the large wings it is similar to the fighter version

# FORSTER

**"C" Class MOTORS**



.997 inch—½ H.P.—$20.75 complete

## FIRST AGAIN

at the Eastern Sea Plane Contest, establishing a new N.A.A. record. Consistent outstanding performances, reliability and great power make it the choice of champions. The model "Super-99", with the "Speed-Control-Carburetor" is in a class by itself. No other motor offers you its advantages. It is especially suited for high power contest planes and

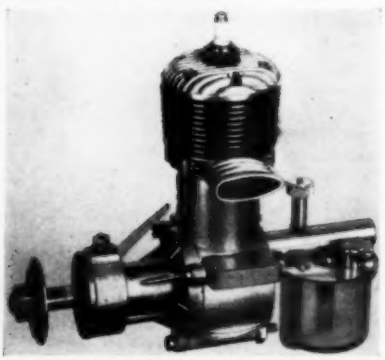
**RADIO CONTROLLED PLANES**

The throttle governs the speed, from idling to full power!

*Write today for Folder "C"*

*if "B" class is your field, consider the advantages of the new 1/5 H.P., B class*

# FORSTER "29"



.297 inch—1/5 H.P.—$15.50 complete

**Outstanding in QUALITY ENGINEERING, POWER, SPEED and PERFORMANCE!**

Equipped with the latest type rotary valve, hardened and individually lapped steel piston, new high turbulance combustion chamber, internal streamlining, and the new exclusive "clutch propeller lock," it is setting new standards of performance! The crankshaft is fully counterbalanced and hardened, the timing cam and tubular wrist pin are also hardened. High speed bearings, a new "snap" piston pin lock and other new features set it apart from ordinary motors.

Standard beam and radial mounts! It lends itself exceptionally well for inverted mounting, making perfect cowling easy. No bearing trouble—no extras to buy! For quality and dependability, look to FORSTER.

*Write today for Folder "B"*

**FORSTER BROTHERS**

1415 Lake Street, Melrose Park, Ill.


## Gas Lines

*(Continued from page 23)*

their models but will do so according to someone else's idea of it, not their own.

Now, model builders, you should decide whether you want to run your own organization or not! If you do, let us be on our way and get behind the Academy to make it a strong, vital body that will withstand the efforts of those who would tear it apart for their own glorification and to satisfy their own selfish ambitions.

---

Now we take you on a long jump—from our own problems of self-government here in America to far-off Russia. Picture No. 1 shows a young Russian model builder, S. Kostenich, with his pusher-autogiro-gas hydro. He exhibited and flew it at one of the regional contests held periodically in his section of the country. Originality is the keynote of this ship; it is doubtful if any builder has seen more unique features incorporated in any one ship. A canard-pusher model is sufficiently difficult to build, but to make it an autogiro and a hydro as well carried it to the pinnacle of the imagination. No data was received concerning the performance of this ship; however, its builder has at least gained the benefit of trying something original. Perhaps this is the answer to the autogiro problem—it is suggested that builders experiment to determine whether a pusher or tractor autogiro gives the most satisfactory results.

Low-wing models are usually considered to be more unstable than high-wing ships. Picture No. 2 shows a low-wing plane built by R. J. Moderson, Sr., of Maplewood, N. J. It was entered in the Class C group of the Queens City Gas Model Society of Plainfield, N. J., contest, held recently at Hadley Airport, New Brunswick, N. J., under the auspices of American Legion Harry Hansen Post 163 (Fords, N. J.). More than 150 planes were entered and nearly 2,000 spectators were on hand.

Many readers would object to the statement that this plane essentially is not a low-wing. Their opinion on this issue would depend on whether they are thinking structurally or aerodynamically—structurally it is a low-wing but aerodynamically it is not. Consider the matter carefully: Essentially a low-wing is an airplane in which the center of lift is below the line of thrust. For instance, consider the type of plane used at the National Air Races; a straight wing with little dihedral is used on many of the ships. The center of lift is at the center of the wing on its upper surface, or where the upper surface would be provided it passed through the fuselage. The power is usually supplied by an inverted inline engine. The line of thrust being nearly level with the top longeron of the fuselage, obviously this is far above the center of lift.

Now let us look at this little plane. Through the "trick" of using a large dihedral, the center of pressure has been raised to approximately the center of the fuselage. On the other hand instead of an inverted engine, an upright engine is used, so that the line of thrust is at the bottom longeron of the fuselage; thus placing the thrust line *below* the center of lift. This places this machine in the unique category of being something that it isn't. Nevertheless it is clever indeed to get the effective appearance of a low-wing yet gain the unusually stable qualities of a high-wing. Stability does not result from construction proportions as such, but rather from force-arrangement in an aerodynamic sense. This is an excellent example for model builders to design their planes to a force set-up, the intangibles in model design, instead of merely visualizing their design as a concrete structure.

Winners in the various events at this Queens City meet were:

| | Time—Min. |
|---|---|
| Class A: | |
| M. Schoenbrum, Brooklyn, N.Y. | 12:13 |
| Philip Fruchtman, Brooklyn, N.Y. | 11:54 |
| George Moro, Garfield, N.J. | 11:27 |
| Class B: | |
| H. Simmons, Middlesex Boro, N.J. | 7:49 |
| Carl MacCready, New Haven, Conn., | 7:14 |
| Melvin Agne, New Haven, Conn. | 6:16 |
| Class C: | |
| Ray Hooey, Fairlawn, N.J. | 18:29 |
| C. Simmonds, Middlesex Boro, N.J. | 12:29 |
| Henry Struck, Flushing, N.Y. | 10:53 |

The highest award of the day went to Ray Hooey in Class C, with a total time of 18:29 min.

Mr. Hooey won the International Correspondence School Scholarship valued at $150, also the Class C trophy and a Brown D motor. He was flying a model powered with an Ohlsson 60 motor.

Forty of the planes flown by the contestants were their own design and one of the Simmons boys flew a plane of his own design, also a motor built by himself. This plane and motor took fourth place in Class B.

Picture No. 3 shows Frank Jakubek of 30 Croton Terrace, Yonkers, N.Y., holding his unique "sea-gull" gas model amphibian with which he won first place in Class B at the Sky-Blazers Contest held at the New York World's Fair. The model is of unusual design and, though Frank is only 13 years old, he displays excellent workmanship.

Here is another unusual idea: Picture No. 4 shows Clem Gelzunas of Union City, Conn., holding his parasol gas model which has a transparent, celluloid wing mount. This material allows the builder to examine the batteries and timer at any time he may desire, without disturbing any of the mechanism, unless actual repairs have to be made.

We have some news from Douglas Jones Bintliff of 1919 North Vermont Avenue, Hollywood, Calif., telling of a contest held by the Southern California Gas Model Airplane Association. He says:

"With a smile larger than all outdoors, Frank Cummings walked away with the 'works' in the Southern California regionals, August 24 and 25. Frank hung up 24 min. 32.2 sec. with his Tiger-powered model. And the 'works' consisted of $75 first place money, MODEL AIRPLANE NEWS trophy and another Tiger motor.

"Mel Anderson and Ray Acord took a double-billing for second place in the

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### New MEGOW "199" MOTOR

Operates upright or inverted. Chrome-vanadium steel cylinder honed and lapped to .0001". Timer enclosed. Crank case special aluminum alloy, permanently sealed. Extra long bronze bearing. Tungsten points. Bore and stroke, ⅜". Disp. .199. Weight 3½ oz. Block tested.

**$12.50** *with coil and condenser*

### Aero-Champ 95¢

**E21 Gas Model** (Kit only. Less Wheels & Prop.)

Designed especially to take the "199" motor shown here. A brand new type gas model, practical and easy to build. Small, light and sturdy for safe landings. Wingspan 46 in. Flying weight 16 oz.

Complete with "199" Motor, Megow Sponge Wheels, Rite-Pitch Propeller and Flight Timer. **$14.95**

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50" span model of popular in-line engine, tandem sport trainer used by U.S. Army. Complete with plans and materials. **$1.50**

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37" span model of 500-mile-per-hour interceptor pursuitplane. Tricycle landing gear, 3-blade semi-carved propeller, full-color insignia, colored dope, plans and all necessary materials.

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### D10 GULFHAWK, JR.

17-in. model of Al Williams' latest. A Stinson 105. Colors orange and white. Complete with plans and all materials.

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### J17 "STUKA" BOMBER

30-in. span rubber-powered model of the German Junkers Dive Bomber JU 87B. All materials and plans.

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- ☐ Aero-Champ complete
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- ☐ C31 Spitfire
- ☐ CATALOG

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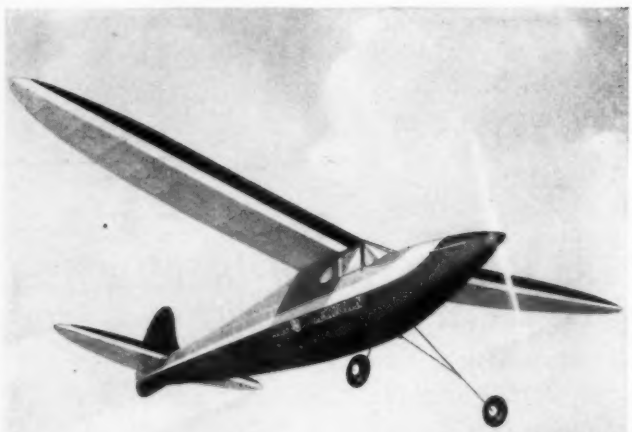
*Destined to capture the heart of every patriotic young American . . .*

# ★ALL AMERICAN★



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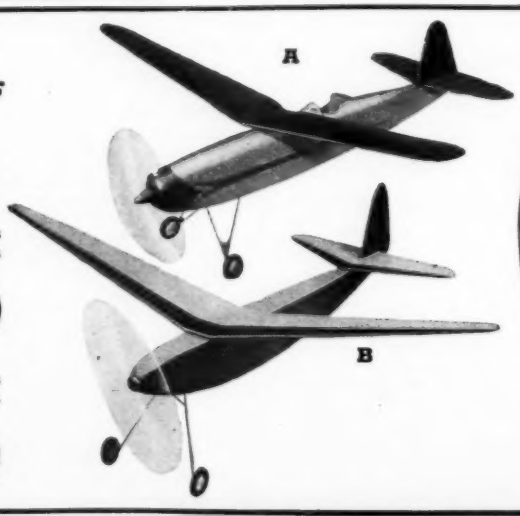


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**B. FURY.** A really beautiful model that gives much pleasure building, and hours of enjoyment in the air. The Fury is easy to build and a real flyer too. Wing and stabilizer light blue with red trim. Body and rudder all red. **25¢**
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"MI RY"

Tops in Class

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Wingspan ... 750 Length ... 52"

## *Miss America*

40" WINGSPAN . . . LENGTH 27½"

Gas type, gives all the thrills of a gas model flight! Show your colors! Build "Miss America"! An excellent contest model that will beat anything in its class! COMPLETE Kit includes M & M pneumatic wheels..... **$1.95**

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**BIG BARGAIN CATALOG 5¢**

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# PARACHUTE PLANE

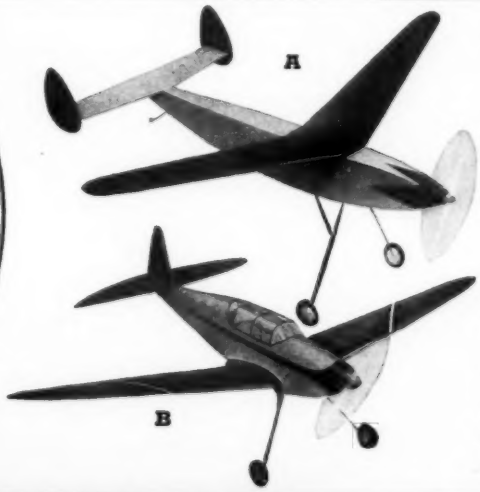
*with automatic trap door release!*

**40" WINGSPAN** **$1.50** **POSTPAID** or at your dealer

Never before has a plane received such widespread acclaim as Scientific's new "Parachute Plane." It's chock full of new flying thrills! Imagine—after climbing 300 feet or more, out comes a pilot with his parachute! And it's all done automatically! Besides, it's a trim endurance model that will easily make flights of a mile or more! Look at that long, graceful wing, elevated and adjustable too; that classy open cockpit in a slim, streamlined fuselage measuring 28 inches in length! With a plane like this, you'll be the envy of every fellow in the neighborhood. Only $1.50 postpaid.

Illustrated at left: AUTOMATIC TRAP DOOR. Parachute and pilot are placed in chamber beneath airplane and trap door closed. Before releasing model, trap door friction timer is set by pushing forward the handle, protruding through bottom of fuselage. After approximately 40 seconds, trap door automatically opens and the pilot and parachute slowly drift earthward.

$.95 POSTPAID

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## NEW 30" MODELS DESIGNED TO FLY!

**A. WHIPPET.** Hard to beat when it comes to endurance. Features: Swept back wing, twin rudders, simple and efficient landing gear. Its red wing is adjustable and detachable. Rudders red, fuselage and stabilizer white with red trim. COMPLETE KIT POSTPAID OR AT YOUR DEALER **50¢**

**B. BULLET.** The fastest thing on wings! A pursuit type plane with a low, streamlined, tapered wing; movable tabs on tail surfaces; single strut landing gear; easily constructed enclosed cabin (including instrument panel). COMPLETE KIT POSTPAID OR AT YOUR DEALER **50¢**

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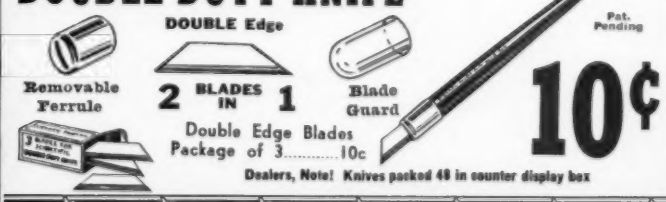
## DOUBLE DUTY KNIFE




Double Edge Blades Package of 3.....10c

**10¢**

Dealers, Note! Knives packed 48 in counter display box

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## MAIL FROM VALLEJO, CAL.

"I purchased one of your NOVA KITS, upon its completion its first flight was its last—out of sight! This is the only kit I have ever purchased which, when assembled, gave a job so completely engineered that it would fly without adjustment!" (From Original On File.)

Kit includes Clark 'Y' ribs completely finished and notched. 10" "proper-pitch" Helical type prop, and finished wheels. Free wheeling prop attachment and shaft, Celluloid round bamboo, celluloid tubing steel wire, assorted. Balsa, cement, dope, brass and SILK FOR WINGS AND FUSELAGE..... **$1.00**
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## NEW! TIMELY Para-Shooter
TRADE MARK

Be the first to demonstrate practical PARACHUTE principles with this unique PARA SHOOTER. "TRU-DETAIL" figure gently sails to earth beneath silk parachute—Can be used with or without plane. If purchased at your dealer PARA SHOOTER complete (nothing to build NOT a kit) only..... **10¢**

**SPECIAL** For limited time, we include PARA SHOOTER with $1.00 NOVA KIT. Includes plane, parts for air launching with any plane.

BY MAIL: 15c if ordered in conjunction with other items. Postage additional.

DEALERS: Write or wire for unusually attractive proposition on this unique item. Cash in NOW—while this phase of aviation is red hot!

## BLITZ QUICKEST STARTING COILS

For stamina and sheer grit, rely on "SUPER" Blitz for Class "A" or "B" type engines. Weighs scant 2 ozs. Will start and/or operate on a 1½v penlite cell battery! Includes hi-tension lead. Suitable, also, race (By mail, add 5c postage)..... **$1.50**

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England's famous "7-in-1" STUDIETTE. Perfect for modeling, Shop and Craft Work, Stencil and Mat Cutting, Photographers! Single operation for: Tongue and Groove; Channel Notching; Ovaling; T. H. & L. Shapes; Rounding; Dovetailing, etc. No other like STUDIETTE. Rust resistant. High carbon steel hand ground and sharpened. Extra blades only, 3 for 25c. (Add 5c postage.)
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Exact replica of real tires. Cushions landing, prevents skid and lost motion. Black rubber, wood hub. For planes, race cars.

2" size—wgt. ¾ oz. pr. .....60c pr.
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If you build Model Planes, Boats, Trains or Autos you need a copy of our 1940-41 Hobby Guide & Catalog (10c). Profusely illustrated (over 600 items) contains Valuable Hints, Charts, Diagrams.
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day events, each with 24 min. 9.2 sec. Their jobs were Super Cyclone-powered and just couldn't seem to out-do one another. A toss of the proverbial coin gave preference to Ray. However, already the proud owner of a trophy like Douglas Aircraft had up for second winner, Ray pushed this one into Mel's hands and satisfied himself with the third place cup. Sportsmanship, fellas? So the boys came in second—Mel lost the toss to come in for third—Ray gave Mel second place 'hardware,' but retained second place title—Ray won second place, but lost it to win third place, still taking home second place prize. There it is—now you figure it out. Then they split 2nd and 3rd place money to take $37.50 each.

"In the Saturday night precision meet, John Brodbeck, a Compton, California, A-e-r-o-c-r-a-t, snared number one place by the 'skin of his fuselage' with 75 points rung up for his Brown 'B'-powered original designed cabin job.

"Hans Wall took John's dust only to miss first billing by a single count, 74 points. Hans' swank little Torpedo-powered mid-wing job really took the grandstanders' eyes.

"Willard Strange ran third with a close 73 points—another Compton Aerocrat.

"The weather was swell. California's 'unusual' atmosphere hung at about 1800 feet and no ships were lost because of visibility. The N.A.A. Avions—some on bicycles, automobiles and many afoot—did a great job of retrieving from not-too-close highways and neighboring airports. They even located some ships which had been lost during other days.

"Some 300 entries took to the air for the first flights of the day meet. Most of them returned to the big circle for a second try during the afternoon—only about fifteen weeping in their prop-wash as they went wearily home to rebuild. It was best flight out of two."

Times for the first ten winners were:

Frank Cummings, 1111 Alabama St., Los Angeles ..... 24 :32.2
Ray Acord, 6355 Hollywood Blvd., Hollywood ..... 24 : 9.2
Mel Anderson, 2013 Edgewood Ave., Alhambra ..... 24 : 9.2
John E. Bunting, 1277 N. Raymond Ave., Pasadena ..... 21 : 6.2
John Brodbeck, 441 W. Palm Dr., Compton ..... 18 :12.0
Jim Williams, 6659 Sixth Ave., Los Angeles ..... 16 :21.0
Harry Osbourne, 732 Tularosa Drive, Los Angeles ..... 15 :22.2
Carl Turner, 1039 Irving St., Glendale ..... 14 :57.9
Paul Stratgur, 118 Fourth St., San Bernandino ..... 13 :15.0
Clifford Propst, 5609 Valley Glenn Way, Los Angeles ..... 13 : 7.8

Picture No. 5 shows the contest in full swing, as it appeared from a plane hovering over the field. You will note the efficient lay-out: Parking place for cars, space for spectators, stalls for the builders and their ships, points of take-off and circles for spot landing.

Picture No. 6 shows Frank Cummings, first place winner in the daylight contest. Frank holds the prizes he won, including the MODEL AIRPLANE NEWS Trophy.

Picture No. 7 shows two more winners: Mel Anderson, right, and Ray Acord, with their Super Cyclone-powered ships. They tied to a split second in the daylight contest.

Picture No. 8 shows Gail Currie of 651 S. Rives Avenue, Downey, holding what is probably the most accurate and thoroughly detailed scale gas model in the country. It is a scale Vultee fighter. Every detail is present, including gun sights, cockpit details, instruments, etc.

Picture No. 9 shows John Brodbeck, first place winner in the night events, with his original design cabin plane, powered with a Brown B. John "hung up" 75 points for the night precision flying and took fifth place in the daylight hops with 15 min. 9 sec.

Picture No. 10 shows the three winners in the Class C event. They are, left to right: Ted Gillett, 1st; Jim Williams, 2nd, and Eugene Newcomb, 3rd.

We also wish to thank Mr. Howard Broughton of 6714 McKinley Avenue, Los Angeles, Calif., for some of these pictures and interesting information.

The Louisville Model Club had its first A.M.A.-sanctioned model contest on August 25. It was sponsored by the Junior Board of Trade and the Club. Events were: Gas Power, Rubber Fuselage, Rubber Stick, Hand-Launched Glider, and Speed. Trophies, motors, kits and cash were given as prizes.

Picture No. 11 shows a group of club members assembled at the Tennessee Model Club Contest held at Nashville. At this contest the members pulled a "blitzkrieg" on their hosts; Charles Keeling placing second in the Gas Event; Bill Shaw, W. H. Strode, Gilbert Hardwick and Billy Durham being respective winners in the Rubber Power Event. In the Stick Event Fred Harwood and Bob Wilkenson were first and second respectively. Fred Harwood was third in the Glider Event.

Many model builders probably have wondered what has happened to Maxwell Bassett, our first well-known gas model flier. Well, Maxwell has been busy preparing himself for an aeronautical engineering career. Having completed his engineering course, he is now at Middle River, Md., as engineer with the Martin Company. Here itself is the story on how model aviation led to engineering in full-scale aviation development. Picture No. 12 shows Maxwell preparing to launch his new radio-control job. He has done considerable work on this lately and is putting one of his old-type ships through new paces; guiding it, through radio, from the ground.

### New York

William R. Mott, contest director of the Richmond Model Flying Club of 26 Bond Street, Staten Island, N.Y., writes:

"Approximately 100 contestants attended the 4th Annual Gas Model Meet of the Richmond Model Flying Club at Staten Island Airport on Sunday, August 11, 1940.

"Flying conditions were excellent and the best flights ever made on Staten Island were turned in. The places were as follows:

# MORE than MEETS the EYE

BUNCH MOTORS • BUNCH MOTORS • BUNCH MOTORS •

HI FELLOWS:

WHEN YOU BUILD YOUR SHIP YOU EXPECT IT TO HOLD TOGETHER. ALL MODELCRAFT SUPPLIES, CEMENT, DOPE, BALSA COVERING, ETC., MUST PASS MY RIGID SPECIFICATIONS BEFORE BEING PLACED IN YOUR HANDS.

*Barney*

# SUPER SNOOPER

## (EVERYTHING MODERN)

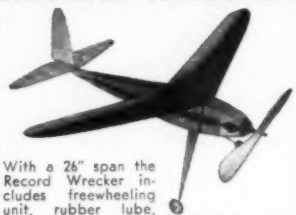
This NEW model has a wing area of 210 sq. in., and meets Wakefield requirements. Test flight lasted 50 minutes and covered 5 miles. The SUPER SNOOPER is easy to build has Dihedral Stabilizer, twin Rudders, Polyhedral Wing, and flies like a gas job.

Kit complete with cement, dope, lube, 45 feet of rubber and folding prop **$1.50**

## ALBATROSS 45"

Designed for long flights, this glider is easily built and will give you plenty of thrills in the air. Flights of 2¾ hrs. duration have been turned in. Kit complete. Add 10c for postage ..... **50c**

## RECORD WRECKER



With a 26" span the Record Wrecker includes freewheeling unit, rubber lube, contest rubber, best quality balsa, cement, dope and plans. Add 10c for postage ..... **50c**

## PACIFIC ACE

Kit contains an ample supply of first grade wood and high quality cement. Comparable with and outflies most dollar kits. Add 10c for postage ..... **25c**

## SOARING GLIDER

31½" Soaring Glider has turned in many flights of better than one hour. Kit complete. Add 10c for postage..... **25c**

## BLACK BULLET

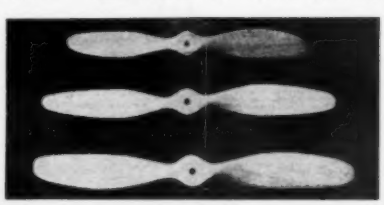
NEW 30" Low Wing . . . It really flies! Kit complete add 10c for postage ..... **25c**

## CHAMP

It will outfly any model in its class. The kit is complete, freewheeling unit, plenty of rubber, rubber lube and best balsa. Add 10c for postage ..... **$1.00**

# LOOK! D-G GAS MODEL PROPS

Machine made from straight grain hardwood. Show from 20 to 30% more thrust in every test than any other prop. Put one on your ship and see it climb faster than it ever climbed before. Sold by all dealers and distributors who want to give you the best. Stock up now. Complete range of sizes, 9", 10", 11", 12", 13", 13½", 14", each..... **15¢**



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## MODELCRAFT MOTORS

**BROWN Class "C"**

Model "D" $12.50
Model "C" $18.50
Model "B" $21.50
Model "M" $16.50

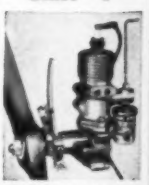
**JUNIOR MOTORS BROWNIE Class "B"**

.20 Displacement ..... $7.50
Orders will be filled in rotation as soon as deliveries start.

**MADEWELL Class "A"**

Perfect for Miss Tiny. .14 Displacement ..... $7.50

**SKY CHIEF Class "C"**



Displacement, .526, ½ H. P., Base ⅞, Stroke ⅞", weight 10 oz., with condenser and coil ..... $6.95 Postpaid

**ATOM Class "A"**

Bore ½"—Stroke ½" Weight 2 oz. $12.50

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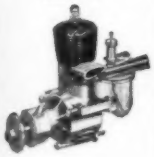
THE LEADING SUPPLY HOUSE OF THE WEST ★ 7306 SOUTH VERMONT AVENUE, LOS ANGELES, CALIF.

## MODELCRAFT MOTORS

**OHLSSON "19"**
Class "A"

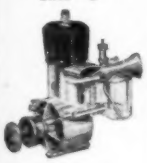
.19 Displacement Just right for Miss Tiny ..... $14.50

**OHLSSON "23"**
Class "B"



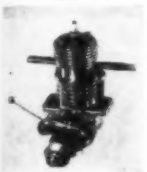
.23 Displacement Just right for Sky Baby ..... $16.50

**OHLSSON "60"**
Class "C"



.60 Displacement For Your Spook 72" ..... $21.50

**"O.K." STANDARD**
Class "C"



Displacement .604, Bore and Stroke .900 x.950 ..... $16.50

**"O.K." DE LUXE**
Displacement .616, Bore and Stroke .900 x31/32 ..... $19.50

**"O. K." 49**
Class "C"

Displacement .49 Bore and Stroke .900 x.775 ..... $12.50

**"O.K." SPECIAL**
Displacement .604, Bore and Stroke .900 x.950 ..... $12.50

# "SPOOK"

SPOOK 48" Class "A" or "B" SPOOK 72" Class "C"

*You'll Soon Find Out —*

**"NO OTHER SHIP CAN CATCH THE SPOOK!"**

The first model that can handle an Ohlsson "60" at full throttle.

Get out from behind the 8 BALL. Order your SPOOK Now!

**SPOOK 48" Specifications:** Wing Span 4 ft.; flying weight with Ohlsson "19", 18 oz. Wing loading 8 oz. per sq. ft. Can be flown as class "B" with Ohlsson "23," Hi-Speed or Brownie. Kit complete with cement, dope, covering and wheels..... **$1.50**

Plans only ..... 25c

**SPOOK "72".** Sixty-three night flights (no thermals at night) average over 1 minute each using 8 second engine run. Wing span 6 ft.; flying weight 3 lbs. Power with Brown, Ohlsson "60" or other class "C" engines. (The first model that can handle an Ohlsson "60" at full throttle.) Kit complete with cement, dope, covering and wheels..... **$3.95**

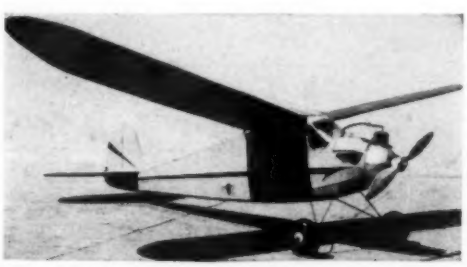
Plans only ..... 50c

## MISS TINY—CLASS "A"

Wing span, 46". **DeLuxe Kit** contains spun cowl, silk, 2½" Voit Air Wheels, cement, dope, die-cut ribs, plenty of good balsa, and full size plans. Price..... **$3.95**

**STANDARD KIT** same, but with bamboo paper covering..... **$2.95**
**DRY KIT** complete except for wheels, covering, cement and dope ..... **$1.95**

**PLANS ONLY** ..... 25c



## SKY BABY—CLASS "B"

Designed for Class "B" engine such as Ohlsson 23, Torpedo, Junior Motors Brownie, this model in its test flights did 15 minutes on a 12 second engine run. Has taken many firsts, including the recent Fresno contest. Wing span 54", chord 7". Kit complete with cement, dope, covering, formed landing gear, air wheels, spun aluminum cowl, etc..... **$3.85**

**PLANS ONLY** ..... 25c

## PACIFIC ACE—CLASS "C"

**66 in. tapered wing. DE LUXE KIT** contains tapered spars, beveled and tapered trailing edge, die-cut ribs, turned aluminum cowl, 1 qt. gas dope, 1 pt. cement, 3½ yds. super silk, formed landing gear, 4½ in. inflatable air wheels, dural wire, alum. tube, washers, bolts, haskalite, dural sheet, hook up wire, switch, selected hard balsa, full sized, black and white, plans with test flight instructions, complete..... **$8.50**

**STANDARD KIT** with bamboo paper, ½ pt. of dope, 1 pt. of cement and 3½ in. air wheels..... **$6.25**
**DRY KIT** same as above without cement, dope, silk or wheels ..... **$4.75**
**PLANS ONLY** ..... 50c

# ★ MODELCRAFT ★

THE LEADING SUPPLY HOUSE OF THE WEST ★ 7306 SOUTH VERMONT AVENUE, LOS ANGELES, CALIF.

**MODEL MAKERS!**
**TRY PLASTIC WOOD**

For modeling airplanes, ships, coaches, trophies, puppets—PLASTIC WOOD is an ideal medium. It handles like putty; hardens into wood. Moulds readily—and when dry can be carved to secure any details desired. In cans or tubes at paint, hdwe., 10¢ stores.

**PLASTIC WOOD**

**OLD ENGLISH CEMENTS**

This "fixer" quickly and permanently joins and repairs china, glass, wood, celluloid. Excellent for use in model airplane making.

**TRANSPARENT OR METAL COLOR**

*Bremer*
**WHIRLWIND**
**MODEL RACER**

*Proved* **FIRST** in hundreds of Meets — in thousands of "Heats"

FIRST in transverse springs; low center gravity. FIRST in Special Formula castings for added strength. FIRST in new style wheels and tires for extra speed, extra safety, extra wear. FIRST in beauty—highly polished body, authentic scale designing.

**FREE**
Complete Parts List, illustrated and fully described. At your dealer—or write Dept. MA-110.

Lowest Price in Top Quality Racers..... **$19.50**
Complete, Less Fly Wheel and Motor

Wheel base 12¾". Overall length 18". No machining, no drilling necessary. Hardened steel Boston gears in oil. Trouble-free direct drive. Strong front axle adjustable for steering. Frame designed for any size motor. Conforms to National Racing Rules.

H. F. AULER CO., MILWAUKEE, WIS.

| Class A: | Total Time—Sec. |
|---|---|
| Howard Simmons, Middlesex, N.J. | 595.0 |
| Carl Hermes, Jr., Bridgeport, Conn. | 467.5 |
| Frank McElwee, Cranford, N.J. | 301.4 |
| **Class B:** | |
| Andrew Davis, Elizabeth, N.J. | 278.4 |
| Jerry Stoloff, Brooklyn, N.Y. | 246.9 |
| Irving Neitlick, Brooklyn, N.Y. | 201.8 |
| **Class C:** | |
| Douglas Banks, East Orange, N.J. | 1259.1 |
| John Findra, Sr., New Brunswick, N.J. | 676.0 |
| Milton Schoenbrun, Brooklyn, N.Y. | 363.5 |
| John Smith, Maplewood, N.J. | 337.1 |

"Andrew Davis, Elizabeth, N.J., won the Richmond Model Flying Club trophy for high-point scorer of the day.

"In most cases, the total times were made in one flight, as the planes went so far as to be irretrievable in time for the contestants to take their remaining flights."

It appears from this that the Simmons boys place well up towards the top of the list in every contest. You will recall that Russell Simmons won the Eastern States Gas Event with his remarkable ship; plans of which will appear in our next issue.

Another report of activities in the New York area comes from C. K. Moon, 473 East 9th Street, Brooklyn, N.Y., who says:

"The annual gas model meet of the Hudson Valley Gas Model Association held Sunday, August 25, at the New Hackensack Federal Airport near Poughkeepsie, N.Y. resulted in some unusual flight conditions which led to the establishment of many new meet records.

"Experts to the contrary, Class A ships provided the thrills of the day. Joe Beshar's little Bantam-powered ship turned in three flights for an average of 16:27; his longest flight being 36:27. Ray Hooey's Bantam-powered model turned in an average of 13:45 with a high flight of 34:43.

"Results of the meet, by class, were as follows:

| Class A: | Motor | Av. Time |
|---|---|---|
| J. Beshar | Bantam | 16:36 |
| R. Hooey | Bantam | 13:45 |
| S. Jesket | Bantam | 6:25 |
| **Class B:** | | |
| W. Mulvay | Ohlsson 23 | 12:00 |
| C. Kowalkowski | Ohlsson 23 | 8:16 |
| F. Antosh | Ohlsson 23 | 2:26 |
| **Class C:** | | |
| C. A. Capozzi | Ohlsson 60 | 13:05 |
| R. Simone | Ohlsson 60 | 9:35 |
| N. L. Miller | Super Cyclone | 2:31 |

"Weather conditions were ideal and thermals were abundant. At one time six ships, including those of Beshar and Capozzi, were seen ascending in an updraft over the field. The meet was well handled throughout, the Poughkeepsie Exchange Club cooperating with the Poughkeepsie Gas Model Club. Mr. Howard D. Clark was Contest Director."

## Illinois

On August 23, at the Gage Park Field House of 2411 W. 55th Street, Chicago, the following contestants were awarded their prizes as winners in the Fourth Annual Midwestern States Gas Model Contest:

| Class A: Position | Total Seconds |
|---|---|
| 1st. Carl Goldberg, 4720 N. Lawndale Ave., Chicago, Ill. | 426.2 |
| 2nd. Truman D. Judson, 4025 N. Greenview, Chicago, Ill. | 276.6 |
| 3rd. Melvin Yates, 419 Kraker, Joliet, Ill. | 239.7 |
| 4th. Fred Kunze, 2502 S. 28th St., Milwaukee, Wis. | 220.7 |
| 5th. Jack Roeser, 535 Clarence, Oak Park, Ill. | 205.3 |
| 6th. Al Ledder, 7430 Vernon Ave., Chicago, Ill. | 176.7 |
| 7th. Bernard Penksaw, 2042 Narragansett, Chicago, Ill. | 156.0 |
| 8th. Walter F. Gregorski, 1940 S. 20th St., Milwaukee, Wis. | 146.8 |
| **Class B:** | |
| 1st. Edmond Lauer, 201 West Main, Crawfordsville, Ind. | 968.8 |
| 2nd. Charles A. Lawrence, 4036 N. Western Ave., Chicago, Ill. | 961.2 |
| 3rd. Merwin A. Bristol, 1121 N. Elmwood Ave., Oak Park, Ill. | 664.3 |
| 4th. Ralph Muchow, 1316 Davis St., Evanston, Ill. | 612.7 |
| 5th. Edward Tracy, 2332 W. Walton, Chicago, Ill. | 437.6 |
| 6th. George Pitelka, 7337 Ogden Ave., Lyons, Ill. | 407.9 |
| 7th. Frank Muss, 12455 S. Stewart Ave., Chicago, Ill. | 325.5 |
| 8th. Carl Goldberg, 4720 N. Lawndale Ave., Chicago, Ill. | 269.0 |
| **Class C:** | |
| 1st. Edward Manthey, 913 N. 5th Ave., Maywood, Ill. | 970.5 |
| 2nd. Erwin Behrens, 1047 Massasoit, Chicago, Ill. | 890.0 |
| 3rd. Edw. Tschernoscha, 2451 N. 26th St., Milwaukee, Wis. | 739.4 |
| 4th. Jules Carrett, 7404 Kimbark Ave., Chicago, Ill. | 582.0 |
| 5th. William R. Lackey, 803 N. 9th Ave., Maywood, Ill. | 541.0 |
| 6th. R. E. Burley, 210 S. Marion St., Oak Park, Ill. | 511.3 |
| 7th. Edmond Lauer, 201 West Main, Crawfordsville, Ind. | 491.0 |
| 8th. Ed. Konefes, 4426 N. Kilbourne Ave., Chicago, Ill. | 414.8 |

The Capital District Aeronautical Association held a gas model contest at the Albany Airport on August 19. J. H. Schneider of 355 Mohawk Ave., Scotia, won with 2182.6 points. Contestants came from Schenectady, Albany, Rensselaer, Oneonta, Scotia, Goversville, Amsterdam, Poughkeepsie, N.Y., and Shelburne Falls, Mass., to participate. The meet was directed by J. Paul Lusk with the able assistance of Joseph J. Lusk, Emmet Newman, Harold Bradish, Albert Reed, Albert Streeben, Judson Kreasy and Robert Flood. The second place winner was George DeLaMater of Oneonta. The winning average time for three flights was 1 min. 15.9 sec. In Class B, DeLaMater made a flight of 4 min. 8.5 sec. Class C was won by Ed Freidburghouse.

## Indiana

Ernest Kitterman of Noblesville, Indiana, writes:

"The Model Maniacs of Noblesville, Indiana, organized in January, 1940, held

Model Craft Supplies
98 Baker St.
Maplewood, N. J.
May 10, 1940

Gentlemen:

I am a dealer in Model Supplies and have sold a great many of your motors. It is needless to tell you what a wonderful motor your company produces and of its success but I feel it worth while as a dealer to express my gratitude for the ideals and business-like service you have extended the public. It is comforting to know that when I sell one of your motors I have your company behind me backing up the guarantee.

In my store I am trying to extend a service that pleases and protects the customer so you can understand why I like to carry your product.

Yours truly,
Paul Tuttle

**A DEALER**

B. Heller & Co.
Calumet Avenue & 40th St.
Chicago, Ill.
April 30, 1940

Gentlemen:

The students at the Campion High School have an aeroplane club and there are quite a few of your Brown engines used on these planes. My son's plane with your $18.50 motor broke all records in flights at Campion School. His plane went up from 800 to 1,000 ft. in the air then leveled off and flew across the Mississippi River into Iowa and was lost. My boy placed ads in the newspapers in the surrounding towns and offered a reward for return of same and his plane was returned to him in less than a week.

My boy thinks a great deal of his engine as it performs so wonderfully in his aeroplane.

Yours very truly,
Edward Heller

**A FATHER**

Church 1
Rensselaer Poly. Inst.
Troy, N. Y., May 8, 1940

Gentlemen:

You may be interested to know that I have one of your model B engines which I bought two years ago. It has given perfect service and starts very easily! I never use booster batteries.

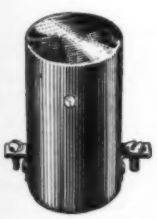
I hope you keep making your motors the way you do now. The simplicity of your motors is one of its outstanding features. I myself find it disagreeable to work on a motor that contains a lot of superfluous junk such as two spark plugs, fins on the head, fancy timers, fancy exhaust pipes, and other such useless things. I am glad to see that in making motors you put the work into making well built parts instead of the above mentioned "sales-appeal" features.

Very truly yours,
Jim Scoville, Jr.

**A STUDENT**

# STILL GOING STRONG

**Year after year mail keeps pouring into our office from satisfied owners all over the world. There's a reason for this. . . . All Junior Motors are carefully tested and run-in at the factory. They are sealed in tamper-proof containers. They are made by the world's most skilled manufacturers in the world's most completely equipped plant. It's easy to be up there with the winners, for there's a Junior Motor in every price class. Listed below are some of the long line of parts and motors. And don't forget the repair service department right here at the plant.**



**COIL $1.75**
J. M. Spark Coil designed for 3 volts. Withstands seepage of gas and oil and dissipates all heat.

**CONDENSER 20c**
A light metal clad unit with combination mounting and ground connection. These features insure long life and easy installation.

**CHAMPION PLUGS 65c**
The famous V, V-2, and V-3 plugs developed exclusively for high performance miniature motors.

**EXHAUST MANIFOLD**
May be attached to any Brown Junior Motor. Clips over exhaust parts; and conducts exhaust away from fuselage.

**MODEL $7.50**
Complete
Ready to Run

**BROWNIE-MODEL "E"**

Brownie is equipped with the finest ignition unit it has been possible to produce—a multiple spring aviation timer. The cam is made of coined steel—hardened and tough! The multiple spring is of finest pre-tempered Swedish spring steel—there is no finer obtainable! This new timer has been developed exclusively for model aircraft, and operates with equal efficiency whether at 1000 or 10,000 R. P. M.

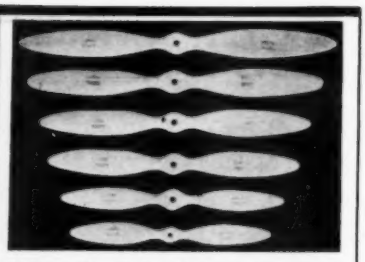
**MODEL "D"**

This new Brown D Motor gives you more value for your money! Precision-made in the world's largest and most completely-equipped plant devoted to the manufacture of model gas motors. The Model D includes the sound engineering advances used in other Junior Motors. New and improved timer! New chrome molybdenum crankshaft! New micrometer needle-valve! New transparent gas tank! Motor shipped ready-to-run, complete with coil and condenser.

**MODEL "D"**
**$12.50**
Complete
Ready to Run

# JUNIOR MOTORS CORPORATION

**2545 N. BROAD ST., PHILADELPHIA, PA.**



# WHAT DO YOU WANT IN A GOOD PROP?

- **LOW PRICE?** These props are priced at only **25c**
- **HIGH THRUST?** If you can find any other prop that will fly your job better than these we will be glad to refund your money.
- **LOW TORQUE?** Correct design and true progressive pitch (8") is your assurance that there will be less tendency to wind in.
- **GOOD FLYWHEEL EFFECT?** These props are heavy enough to make your motor start easier and run smoother.
- **EFFICIENT DESIGN?** Due to the heavy grade of hard wood used it is possible to make the air foil thinner thereby increasing the efficiency. This also makes the blades springier and more resistant to shock. Naturally there is less chance of bending or breaking the motor shaft.
- **BALANCE?** These props are hand sanded and balanced by experts.
- **APPEARANCE?** The shape of these props has been copied from full size props in use on all transports and military planes today.
- **SIZES?** 9", 10", 11", 12", 13", 14".

**ORDER SOME TODAY**

## AUSTIN FLIGHT TIMER

(U.S. Patent No. 2,207,189)

*This popular timer now reduced to only* **$1.00**

Accurate and dependable. The duration may be easily adjusted from 1 second to over 5 minutes. Weighs only ¾ of an ounce, the lightest timer made. Impossible to wear out, all moving parts are completely enclosed for protection from dust and dirt. This timer carries an unconditional guarantee against defective parts and workmanship.

## BATTERY BOXES

The neatest, most practical way of mounting batteries in your plane. The cells are held securely and cannot tear loose even in the hardest crack-up. Made of dural they are very light weight. ¼, ⅜, ½ oz. THREE SIZES: Small for penlite and dentalite cells. Medium for 1" diam. cells, and Large for regular size cells.....35c ea.

## NEEDLE VALVES

Universal type. They will fit practically any motor on the market today. They give a very broad adjustment and in many cases will increase the engine's power. Only a few minutes are required for installing. Complete unit only.....60c

## SPARK PLUG WRENCHES 25c

Eliminates the danger of breaking the porcelain when replacing plugs. Four sizes; large for V-1, medium for Brown, Hurleman and Blue Crown; Small for V-2, and extra small for V-3.....25c ea.

## BROWN STACKS

**EXHAUST STACKS FOR BROWNS or MIGHTY MIDGETS**

Keep your ship clean and prevent dirt from getting in the cylinder. These stacks are made of dural tubing highly polished. Five inches long. Easy to attach or remove.....60c

## OHLSSON 19 & 23 EXHAUST STACKS

Good looking two inch extension that clamps over the original stack. Weight 1/10 oz.....35c

- **NEW CATALOGUE JUST OUT.** A 2c stamp will bring you your copy. Contains 16 pages full of the latest gas model supplies, accessories, kits and motors. Send for yours today.
- **ORDERING:** Take advantage of our super-fast mail order service. Your order filled the same day received. On orders under $1 add 5c postage. Remit by money order, check or stamps. PRINT NAME AND ADDRESS. No C.O.D.s.
- **DEALERS.** Send for wholesale price list and catalogue.

**AUSTIN-CRAFT CO.**

**431 E. Victory Blvd. Burbank, Calif.**


their first annual model meet Sunday, August 4. Prizes totaling $125 drew 91 entries to the first meet. The contest was a big success with about 2,000 spectators.

"High honors in the gas event went to Wm. Kandler of Indianapolis with a total time of 18:14.4 for three flights. Other winners in order are: James Bennet, Indianapolis, time 13:2.5; Herman Batt, Newcastle, 11:48.5; Ray Neese, Indianapolis, 11:43; Ernest Roberts, Muncie, 9:27; Harold Stofer, Indianapolis, 9:23; Harold Stofer, 8:41.5; Logan Coombs, Bloomington, 8:30.5; George Cochran, Indianapolis, 8:18; James Bennet, Sr., 8:13.6.

"Logan Coombs, eighth place winner, launched his ship for an out-of-sight flight on his first attempt and his ship has not been found to date.

"Top place in the rubber entries went to Bob Romiser of Indianapolis with a time of 7:23 for three flights. Second place was won by Kletis Kirk, Middletown, 5:59; 3rd place, Ivan Mount, Marion, 5:23; 4th place, Erle Moore, Noblesville, 5:19; and 5th place, Harold Poer, Anderson, 5:08.

"The club has 30 members to date. Officers of the club are as follows: Pres., Jack Preston; Vice Pres., Bob Moore; Secty., Ernest Kitterman, and Treas., Harry Scherer.

"The club plans to put on a bigger and better contest next year."

### Florida

The Mad Modelers of Lakeland, Fla., with headquarters at 921 East Osceola Street, held a contest on August 11. It was sanctioned by the A.M.A. and directed by Ruper Keene, CAA ground instructor. It was sponsored by the Junior Chamber of Commerce and had 70 entries from various sections of Florida. The respective winners were:

Hand-Launch Glider Event: Gene Chaille, Miami; John Caudle, Lakeland; Edward Smith, Jacksonville. Gas Event: Gene Chaille; Ed McIntyre, Miami; Dale Hoffman, Sanford; Armond Nielsen, Lakeland. Rubber Powered Event: Bill Ransey, Daytona; Armond Nielsen, Fred Whitt, Lakeland.

### Coming Events

On October 12 the Flying Dutchmen of Yonkers, N.Y., will hold an official A.M.A. contest at Reynolds Central Westchester Airport, Valhalla. It is the first official meet of the club and all gas model fliers are invited to participate. Over $100 worth of motors, kits and other merchandise of the highest quality is to be offered at prizes. Those who wish to enter should write to William Mertens, secretary, Flying Dutchmen of Yonkers, 20 South Broadway, Room 1107, Yonkers, N.Y.

### Correction

In the account of the Nationals, given in the September issue of M.A.N., it was stated that John W. Ault placed sixth, winning the General Battery Award. This appears to be an error, for Mr. Ault says that the award he received was a medal and $25 in cash.

### Notice

A number of builders will be interested in hearing that Lt. William Bouldin, 3rd, who is one of the oldest model builders in the country, has opened the Airport School of Navigation in conjunction with Capt. E. D. Carlson. It is located at Orange, N.J. They specialize in teaching Air Navigation, Civil Regulations and Meteorology. They are also offering a home study course.

## "Wedgy" the Record Smasher

*(Continued from page 17)*

fuselage, longerons flat; then glue the 1/8 inch by 3/8 inch cap strip in place. When dried this should be rounded off to the proper shape. The underslung or sub-rudder is cut from sheet balsa then glued to the fuselage in its proper position and sanded to streamline shape. The nose cowl should then be finished off to fit the WEDGY nose.

### The Wing

The WEDGY wing is extremely simple to build because of its shape. The simplest method of constructing this wing is to make two templates of hard balsa. Cut from 1/16 inch sheet balsa, 22 rectangular pieces slightly larger than the rib template. (It would be wise to make at least four more ribs than necessary. These can always be used later for repairs.) By standing all the rectangular pieces of balsa on end they can be evened out so that it will resemble a rectangular solid block. Then place the two rib templates on each side of these pieces of balsa, making sure that they are lined up with one another. Drive a few pins through the rib templates into the bunched pieces of balsa from each side, making sure that it is quite solid. By cutting with a sharp knife or coping saw, this so-called block can be trimmed so that it will have the outline of the airfoil. By using rough sandpaper all bumps can be smoothed out. By finishing smooth with fine sandpaper the outline should be accurate. The notches for the spars should now be cut into these balsa ribs. This can be done either with a saw or razor. After extracting the pins, the ribs will be completed and alike.

The spar should now be joined as shown in sketches, making sure that all joints are pretty near perfect. The gussets on each side of the joints are of sheet balsa and should add great strength to the spar. The ribs can then be placed on to this spar in their proper positions and glued in place. The leading and trailing edge should then be glued in place. The tips which are cut from sheet balsa are then fitted into position. You will note by looking from the side that the wing tips assume a negative angle. This is done to decrease any stalling tendency the ship may have, therefore assuring a flat glide. The sheet balsa leading edge can be fitted to the wing after the 1/8 inch square balsa top spar is in place. After the sheet balsa leading edge is in place, add the cap strips to their respective positions. The wing is then finished smooth by sanding all the excess balsa so that the airfoils of the wing are smooth.

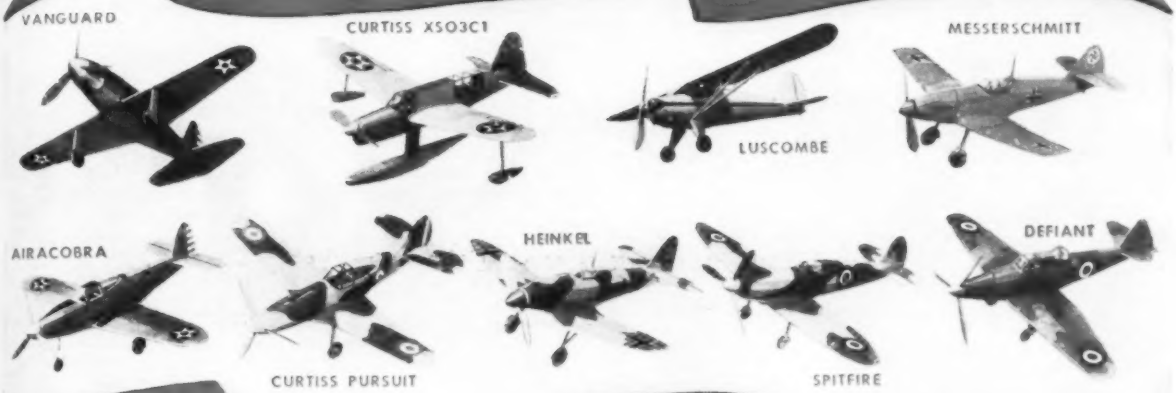
### Tail Assembly

The trailing edge is cut from 1/4 inch soft-sheet balsa. It is placed on the plans

# MEGOW

## "BLUE-PRINT" FLYING MODEL

## WAR PLANES 10¢ EACH




### HO FREIGHT CARS

**Now 25c**

A complete variety of freight cars with precision cut wood parts, exact in scale and highly detailed.

### NEW NEEDLE-BEARING TRUCKS

with **Insulated Brass Wheels,** die-cast bolster and sides. N.M.R.A. standards. Complete parts, per pair . . . . . **25c**

(Assembled, per pair . . . 40c)

### MEGOW NEW TRACK UNITS

**TRACK SECTIONS:** Brass rail accurately held to correct gauge.
**18" sections . . . 25c**

**RUBBER ROADBED:** Shapes easily to curves. Makes a true, firm, realistic roadbed. **18" lengths . . . . . 20c**

Special Rubber Cement for laying Track Sections and Rubber Roadbed . . . **10c**

ABSOLUTELY without competition . . . examine the quality of materials, the smooth-finished selected wood, the profusely illustrated blue-print plans and you'll see why! All have a 16" wingspan, and most have clipped wing design resulting in an even larger model due to relatively longer fuselages. Carefully designed, easy to construct and fly.

Included in the line are such famous names as Airacobra, Spitfire, Defiant, Curtiss Pursuit, Heinkel, Messerschmitt, Vanguard, Luscombe . . . and a sensational new sailplane with 28" wingspan.

*Send 10c Postage for largest and most complete Hobbycraft Catalog of Model Airplanes, Ships and Railroads.*

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Please send big new catalog to

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**Megow**

# BUD WARREN Says:

**Bud Warren points out new Tom Thumb motor construction features.**

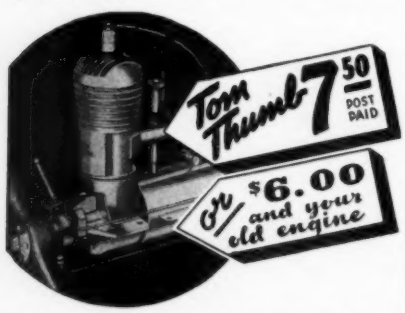
"I'VE got big news to announce! Tom Thumb motors now leaving my shop have new improvements that "hit the jackpot for performance."

"Every Tom Thumb now has a higher compression ratio and is equipped with a new steel piston which I lap into each cylinder for perfect fit. Of course this new "stepped-up" Tom Thumb is also fitted with piston rings to give the long life performance Tom Thumb owners have a right to expect."

"You can be running one of these new Tom Thumb motors in less than a week by sending your order today."

## SPECIFICATIONS and HOW to BUY the NEW TOM THUMB

**The Tom Thumb is the most powerful easy starting 1/5 H.P. engine made. Clip the coupon below, enclose money order for $7.50 (also your old motor for special $6.00 offer), and receive a *brand new* assembled and block tested Tom Thumb. Complete with fuel tank, coil, Champion spark plug, one piece cylinder and head and other modern features. Complete flying weight 10 oz. (less batteries). Bore 7/8"; Stroke 3/4".**

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☐ Rush me one new Tom Thumb Engine. I enclose $7.50.

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I intend to run my Tom Thumb—
☐ Upright ☐ Inverted

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and pinned into position. The leading edge of 3/16 square hard balsa should be soaked in water and pinned in position. The spar of 1/8 inch by 1/2 inch, and ribs of 1/16 inch by 1/2 inch are cut and inserted as shown in the sketch. Cement securely at all points and when dry use a pen-knife or sand block to cut the ribs down to meet the leading and trailing edges, which are sanded to a smooth airfoil section. The rudder outline is cut from 1/4 inch sheet balsa. The rudder rib is 1/4 inch square balsa. When the assembly has been completed and the glue dry, sand to symmetrical airfoil shape.

### Covering

Covering of the WEDGY is extremely simple. Light silk span or double tissue can be used, as this will not add any unnecessary weight to the finish because of the tissue's extreme lightness. Remember that the paper should be cemented to the underside of the wing surface; this will result in a true wing section. When completely covered, water dope. Then brush on two coats of clear dope; it is not necessary to add more since the paper becomes brittle.

### Motor Mounts

Because of many crashes a ship is bound to receive, removable mounts have proven to be the best in every respect. WEDGY motor mounts allow the motor a thrust range of approximately 4 or 5 degrees in every direction. The mounts are made of hard wood and bolted to the hard-wood motor bearers. Since almost every motor has different mounting dimensions, mounts of different sizes will have to be used to fit these motors. The method of mounting is illustrated in the sketches.

### Wiring

The position of the battery box, timer and coil are shown in the fuselage by dotted lines. Any standard wiring diagram may be used.

### Test Flying

Test flying the WEDGY will be the simplest testing job ever, due to the ship's stability. Of course do not be over-confident because mistakes happen. The plane, when completely assembled, should balance at approximately 1/3 back of the leading edge and should weigh approximately 17 ounces. If WEDGY does not balance at this point, shift the ignition weights in the fuselage to achieve correct balance. WEDGY should be test glided in tall grass "just in case." If all the incidence is built in as required, the ship should have a smooth flat glide with a slight right turn (looking from the rear forward). Before attempting to fly WEDGY, check the thrust adjustments so that the motor is directed 3 degrees to the left (from rear forward) and a zero degrees horizontal thrust line, and a bit of right rudder. By allowing the motor to run smooth and at a low speed WEDGY should be launched into the wind from shoulder height. With a motor run of twenty seconds, the model should climb in a left circle while under power and glide to the right on motor shut off. After continuous testing with gradual increase of power, the model should climb in a fast, tight, left corkscrew and roll out to a right floating glide on motor shut off. You will find WEDGY to be the most rugged, dependable ship you have ever owned and your only regret will be that you have only one. So make the best of it!

## Fundamentals of Model Plane Control

*(Continued from page 19)*

angle of turn. All that is necessary is that the lateral area to the model be so disposed that its center is in the correct position relative to the CG to induce the desired degree of slant in XY. The greater the slant, the tighter the turn will be.

The more positive XY is relative to LT the straighter the flight will be. The reason for this can be seen by means of a demonstration. When the model such as is shown in Fig. No. 1 banks to the right, it will rotate about axis XY. If the rotation is through an angle of 90 degrees, it will assume the position shown in Fig. No. 2. The old line of flight is XY. It is obvious now that the nose of the plane is pointed to the right of the former line of flight, in the direction of the bank. Therefore it will have a tendency to nose around to the right, due to the increased angle of attack, augmenting the effect of the right bank.

Now look on Fig. No. 3, here we have a model whose neutral axis is positive to the line of thrust. Assume that the model banks to the right as in the case of the first model, rotating about XY and assuming the position shown in Fig. No. 4, XY in Fig. No. 4 being the old direction of flight.

In this case the nose in the model is pointed to the left of XY and away from the bank. This will create a tendency to turn the model to the left rather than to the right, thus opposing the tendency of the model to turn to the right because of the bank. In other words, the model nosing to the left neutralizes the effect of the banking to the right.

When in flight, such a model would have a tendency to right itself immediately and continue on a straight course rather than turn in a circle.

It becomes evident that the degree of turn of a plane may be regulated by the angularity XY relative to LT.

In our previous discussions of the effect of the position of the center of lateral area, it was stated that the higher the center relative to the CG, the sharper would be the turn and the greater the tendency of the model to spiral dive. This reasoning coincides with the present explanation, for the higher the CLA, the tighter the turn will be and consequently the plane will have a greater spiral diving tendency, provided the model is flying at an approximately horizontal course.

Now assume that your model has a relatively high CLA, but instead of flying nearly horizontally it is designed and made to execute a steep or vertical climb. The CLA being high, the model will have an extreme tendency to roll about XY and turn. Now, however, the nose of the model being pointed upward in a climb, the ship will spiral climb instead of spiral dive. The same rolling action will take place about its CLA neutral axis as well as when it is flying horizontal. However, its climbing position turns the spiral dive into a spiral climb.

On a number of occasions the high CLA

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Modellers — everywhere! — acclaim these magnificent performers. MCHP Kits are complete with simplified working plans. Each features convenient, crashproof motor mount and removable nose.

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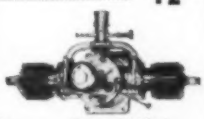

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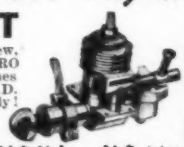

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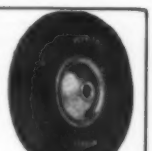

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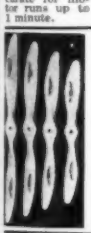

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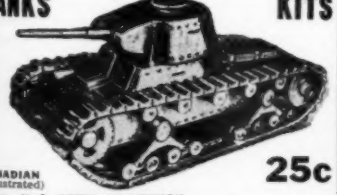

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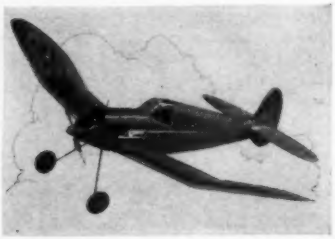

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which produces unstable flight when flying horizontal has been deliberately used to create a spiral climb by designing the model so that the normal attitude in flight is a climb. In other words, under power, the model climbs continuously and levels off only when the motor stops and it starts to glide. As soon as the power ceases, the danger of the high CLA is eliminated for the high CLA only creates a rolling spiraling tendency when the model is flying at high speed under power. When gliding gently, it will float back to earth regardless of the CLA position. Possibly this will throw light on many of the puzzling problems and conflicting statements that model builders have encountered. At any rate it will serve as a positive method of controlling your plane without all sorts of trick adjustments that merely complicate reactions and cause inefficiency.

## Youth Takes Wing

*(Continued from page 9)*

is that the airplane is an expensive vehicle. Like the automobile when it was considered a "luxury for the rich." Not only has it always been expensive to fly as a passenger, but the cost of taking flying lessons was limited to only a select few.

Wise heads of the CAA (now, Civil Aeronautics Board) thought the best incentive to get more prospects interested in the art of airplane manipulation was to offer some less expensive way for young America to get its wings. So logical did their reasoning prove, that Congress, under the Civil Aeronautics act, appropriated enough money for the first experimental program with the thirteen colleges with the stipulation that if the program worked more money would be made available.

As the "thirteen guinea pigs" went through their training on the ground and in the air, selected colleges were chosen and the plan mapped out on a larger scale to start with the fall term of 1939. The idea caught like wildfire with students in colleges and more than were wanted applied for the course. Under this plan nearly 21,000 students have received their student pilot's licenses and many of this number have become holders of private pilot's certificates; some even having gone so far as to win their commercial ratings.

But this year, right now, the biggest civilian training program is in progress, and by Sept. 1st another 15,000 students stepped into their first flight courses.

The program has branched out until now ground-courses and flight training are being given in 550 centers distributed through every state in the union, Alaska, Hawaii and Puerto Rico. At these centers some 500 small, commercial aviation operators are organized to furnish a thoroughly proved course of flying instruction. And in 435 colleges throughout these states and territories facilities for complete ground-school instruction are operating at full-swing.

But there is a big problem facing the instigators of the flight training program. To understand it we must point out that the program has been divided into two quotas: one is open to boys and girls who are not attending college, the other is available to college students or college graduates only.

At first the program was limited to only college students, but strong opposition was heard from those young men and women who wanted to fly and wanted the training without the necessity of going to college. The result was that in some 75 different communities in the U. S. the ground-school course was made available to anyone with the age, physical and mental qualifications. The flight training was then put on a competitive basis with the highest grade students in the ground-course receiving the opportunity to learn to fly at the government's expense.

That is the new phase of 1940's civilian flight training program. This year everyone has the chance and those who show good flying aptitude will get their wings just as easily as the college graduate.

The training schools where the program is in force are the very best in the nation. Instructors at each school have been training in the required government procedure in instruction standards and in measures for insuring safety in this type of aviation. The safety record during the experimental stage and up to now has been near perfect, with only one fatality during the year and a half of the program.

In launching the new program one of the toughest tasks facing the Civil Aeronautics Authority, according to its president, has been securing competent flying instructors. During the year, 1200 of these instructors have been put through re-rating courses in order to bring the training all over the nation under one standard form. An additional 825 instructors have been given a special ten-hour "refresher" course in an advanced secondary course which is being worked out to be offered to those 45,000 students who obtain their private licenses during this year, and have completed their primary training.

The instruction given during the regular course consists of a ground course of 72 hours and a flight course of 35 to 50 hours. The course consists of a ground school which is open to the general public in those communities which are catering to the non-college, prospective pilot. For ground schools having 25 to 49 members, five flight scholarships will be awarded. For those having 50 or more members, ten scholarships will be awarded. In many of these communities this training program is sponsored by some civic group such as the American Legion, Junior Association of Commerce, Chamber of Commerce, or the various aviation clubs that seek to "get in on" the government's training surplus.

When a person wishes to apply for the ground-school course and for competitive flight training scholarships he must see the operator of the flying school in his neighborhood or talk with the supervisor of the various clubs or organizations which might be sponsoring the project in his city.

Initial cost of the ground-school course is only $6.00, which is in payment for the physical examination by an authorized flight surgeon, that is required by the Authority. This is refunded to those who receive their scholarships in flight training at the end of the ground course.

The physical examination is one of the toughest, so don't just think the opportunity is "a breeze." You have to possess 20-20 vision which is just about perfect. You

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must be free from color blindness. Good hearing is also essential. Your lungs must be perfect and your heart strong. Then, too, you must have a good sense of equilibrium and a keen reaction for knowing what to do in the case of an emergency, plus a good knowledge of common sense.

If you pass the medical test you know you stand a chance at the flight training scholarships, but pass it or not, you can still take advantage of the training offered in the ground-school course on the ground. But before too much money is spent on you by Uncle Sam he wants to know that you'll make the grade physically before turning you over to the flight instructor. In colleges the physical examination is necessary for every applicant.

The ground course of 72 hours is divided into various classes. These classes include the following: History of Aviation (2 class hours), Civil Air Regulations (12 class hours), Navigation (15 class hours), Meteorology (15 class hours), Parachutes (1 class hour), Instruments (5 class hours) and radio uses and forms (2 class hours).

In these various classes the student picks up a general knowledge and a technical knowledge of the airplane. From aviation history he learns about the origin of flight and the progress that the airplane has made. In the class on civil air regulations he learns the rules that govern all aircraft in the air and on the ground. He is told when to land on a field with other ships flying in and out. He is taught what altitudes he must fly at over airways, how high he must fly during certain periods and over specific areas, when he can land, etc.

Stiffest course for the prospective pilot is that dealing with aircraft instruments. Here he learns about tachometers, compasses, speed indicators, altimeters, earth inductor compasses, fuel gages and all the thousands of technical aircraft instruments which are such an important part to modern aviation. Many of them he will never find need to use in his primary flight stage, but all of them sometime will come before him and a general knowledge of them at least is desirable.

This ground course is similar in many respects to the ground schooling that is given to the cadet who goes to Randolph Field or one of the army's new training centers. However, it is not as thorough as that given at the army schools, due to the limited time.

When the student is graduated from the ground-school course he is turned over to the flight instructor at the airport for actual flight instruction. To cut down on expenses the training of civilian flyers is done mostly in low-powered lightplanes of the Cub and Taylorcraft type.

Between thirty-five and forty hours of flight instruction, including solo time, is given each student before he is given the Private Pilot's Certificate. Some of the students solo in less than eight hours.

Flying in the lightplanes, the students get a "better feel" of the controls and can acquaint themselves to flying easier than in the heavier, faster ships, instructors say. The army, too, at many of its schools has reverted to smaller type planes as trainers.

Although there is no direct connection between the CAA's training program and


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AMERICAN ACE "36"

The sensation caused by the American Ace made us realize that it surely would be popular with builders of small gas models. Faithfully reproduced, the "36" carries the clean lines and perfect stability of the larger ship. It features a removable motor mount allowing for easy access to the motor. Her sleek lines assure you the beauty of the field. Her flyability assures you of top performance and guaranteed longer flights.

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## That Have No Equal

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★ ★ ★

For "A", "B" or "C" Competition

**$3.95 P.P.**

**INCLUDING**
Silk Covering
Rubber Wheels
Finished Prop

## WINNER 3 out of 10 PLACES AT 1940 NATIONALS

Those who attended the 1940 National went home remembering the standout model, Henry Struck's "New Ruler." Not even introduced in kit form, it was one of the most popular ships on the field. Before the contest, the "American Ace", a scaled down version of the "New Ruler", was designed mainly for competition in Class "B" but also suitable for small Class "C" and large Class "A" engines. Use it with any engine between .19 and .49 displacement.

At the great Quaker City Contest it was the treat of the meet. For the first time, a gas model was placed at the disposal of the field to fly. Experts and novices who handled and flew the ship all agree: "For stability and performance it has no equal."

- 54" Wingspan
- Removable Nose & Motor Unit
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- Printed Out Wood Parts
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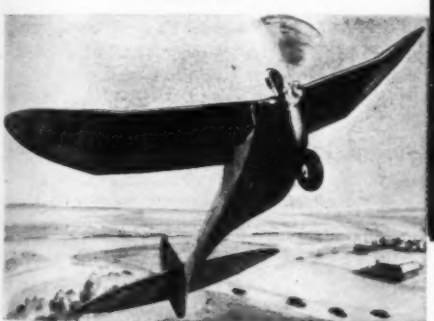
- Streamlined Rubber Wheels
- Carved Propeller

Plus all the features exclusively in BERKELEY Kits. Complete Hardware and Ignition Equipment, Championship BERKELEY Cement and Dope, Premier Quality Balsa, AND Complete Full Sized Plans.

## THE SKYROCKET

DESIGNED BY LEON SHULMAN, THE 1940 NATIONAL CLASS "A" CHAMPION



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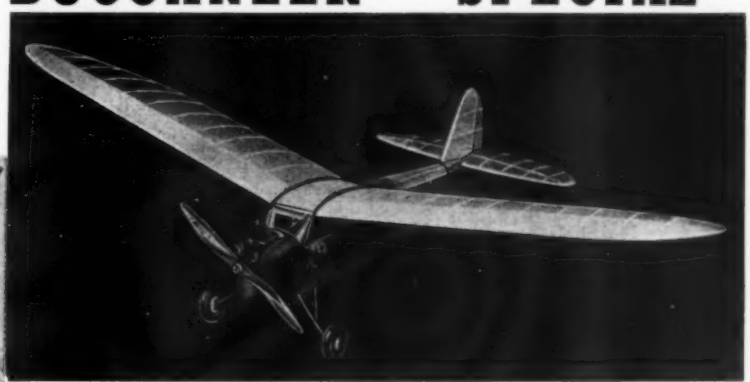

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The kit has the completeness of all BERKELEY Kits, including: Silkspan covering and BERKELEY Time-Air Flight Timer.

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the army drive for more pilots, it is hoped that many of those who take the course will continue on to go to the army's schools for advanced training. Already plans include setting up a secondary course for the civilian trainees who finish the primary stages.

In this secondary course the primary students will be given additional flight hours in airplanes comparable to those used at the army training schools. This secondary program is known as the "Feeder" plan because so many of its students later join the air corps and naval flying forces. It is already in operation in several localities.

Behind all of this government-supervised training, however, there is certain to be found that motive which links ever so closely with the plan to build 50,000 planes for America's fighting air-force.

Lessons learned from Germany where youth was trained to fly "on the tides of the wind" in gliders and then later transferred to real powered aircraft, have taught Uncle Sam the need for pilots to man his fighting machines. To build such an air force, experts say, it will take nearly three pilots for every ship—at least 150,000 well-trained flyers, the cream of the crop of America's youth.

To supply these men, indirectly, the CAA is working out its flight training program. Whether they become military flyers or not, these young men who learn to fly for Uncle Sam are going to be the big reserve in time of defense.

But the girls, too, are taking to the wing these days, for this course is having its definite effect on the "weaker sex." All over the country you will find flying clubs being organized by women. The young college co-ed goes to school today to learn to fly along with her boy classmates, and she won't be outdone.

But the program itself is still growing. Applications have already been received from several hundred additional colleges where flight training courses are sought.

Striking, too, is the effect that this civilian training program has had on the U. S. aviation industry. At the Aeronca plant in Middletown, Ohio, at the Taylorcraft plant in Alliance, Ohio, at the Piper aircraft factory in Pennsylvania, and at many other centers where the lightplane industry is in full swing, planes are rolling off the assembly line in mass production.

Last year, as a result of the flight training offered in colleges, more planes were manufactured for commercial use than in any other year in history and this year reports say that the number will be doubled.

As they gain a more practical knowledge of aviation through the course, American youth is turning its attention to aviation as a career. If he knows how to fly, he knows something about the industry. Skilled engineers, mathematicians, scientists, chemists, the product of U. S. colleges, are needed in these times of national defense and at no spot are they needed so badly as in the aviation industry.

Creating the incentive. The "wisebirds" were right when they offered youth its wings; for these young men are taking jobs in the aviation plants, helping Uncle Sam to produce the best planes in the world, and are always ready to fly them when they are needed.

And the every day American citizen is opening his eyes because for the first time since the Wrights first proved they could fly the airplane is "being brought home;" right home to his own backyard and his neighbors'.

Out at any airport now-a-days you'll find young America and old cramming for a place to sit down and watch "the kid brother" or "the neighbor's kid" try out his wings.

The day of the old barnstormer who came to town dressed in aviator's togs and flashed his daring smile to entice the good citizens into his $10.00 airplane ride is over. To-day's flyers aren't heroes or daredevils; the majority of them are just ordinary, good-looking, intelligent youths with a great big "yen" in their heart to fly—and they're getting their wish.

Perhaps it is the effect of the war and the fear of war that has done it; but whatever it is, this country has finally been awakened to its own invention, the airplane, and flying is coming in to its own. . . . Thanks to those "13 guinea pigs" and the CAA!

## Designing Gas Models For Performance

*(Continued from page 29)*

suit your convenience.

In article No. 2 the minimum sinking speed for the "Aristocrat," the sample model, was determined as 1.67 feet per second (fig. 6), at an airspeed of 15.6 miles per hour (fig. 7). Now suppose we determine what lift coefficient is required of the M-6 wing section used on the model. We can do this by getting the intersection of the horizontal velocity line and the vertical wing loading line. As a matter of fact the lift coefficient required at any airspeed other than 15.6 m.p.h. may be determined in exactly the same manner. From fig. 10, the intersection of the two lines occurs at a lift coefficient of about 1.42. This means that the lift coefficient must be 1.42 to sustain *ANY* model whose wing loading is the same as this one, at a speed of 15.6 m.p.h.

So you see this chart is a universal one, applicable immediately to any and all models. Of course the range of velocities is of necessity quite small, but the same theory holds quite true for higher velocities. In a later article, a chart will be given so that the lift coefficient required at higher velocities can be determined.

| Wing Section | Max. Lift Coeff. |
|---|---|
| Clark "Y" | 1.20 |
| NACA 6412 | 1.35 |
| Eiffel 400 | 1.15 |
| NACA23012 | 1.00 |
| M-6 | 1.10 |
| NACA 2R212 | 1.00 |

FIG. 11

The question which confronts us now is this: Is the M-6 section capable of developing a lift coefficient as high as 1.42? The answer is no. Fig. 11 is a table giving comparative values of the maximum lift coefficients of commonly used model

COMPLETE KIT

$4.95

# REAL ENGINE VALUE—$4.95

Here is your opportunity to buy a kit of the famous G.H.Q. Gasoline Motor. ABSOLUTELY COMPLETE—ALL MACHINING DONE—READY TO ASSEMBLE. All you need is a screwdriver. No mechanical knowledge required.

A large bore engine at a lower price than any small bore engine.

## AN ENGINEERING TRIUMPH . . .
## *Never Before at So Low a Price!!*

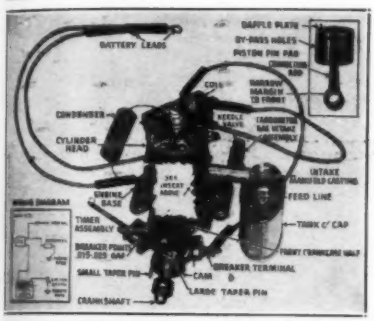
Indeed an engineering triumph—accomplished by outstanding G.H.Q. designers and engineers, who have constructed into the G.H.Q. motor everything that years of exhaustive scientific aerodynamic research could produce—geared to the highest possible degree of perfection. But more than that, the acid test . . . an overwhelming response. Thousands of users in all parts of the country are praising, recommending, and endorsing this scientific achievement. It seems as if everyone in America wants one. The most hair-raising thrill you've ever experienced will be yours with the G.H.Q. motor—actually one of the most powerful motors ever constructed. Has broken records for amazing performance . . . and just imagine—flies model planes up to 10 foot wingspread. AND JUST AS EFFICIENT FOR BOATS, MIDGET CARS AND STATIONARY USE. Easy to start and simple as ABC to assemble.

Everything is in the kit including Champion spark plug, coil, condenser, tank and cap, ignition wire, cylinder, piston, connecting rod, timer, crankshaft, all screws, nuts, bolts, complete instructions, etc. Every part is fully machined and finished. No oil, gas, batteries, or propeller included. A SCREWDRIVER IS THE ONLY TOOL YOU NEED.

EXACTLY THE SAME PARTS THAT GO INTO THE G.H.Q. ASSEMBLED ENGINE

### ALL PARTS GUARANTEED

Average Assembly Time 30 Minutes




### THE ONLY ENGINE WITH A WARRANTY—APPLIES TO BOTH ASSEMBLED ENGINES AND KITS

Over 7000 of these same famous G.H.Q. Gasoline Engines have been sold at $8.50. Over 35,000 in use today. Mass production methods and enthusiastic reception have enabled us to reduce the price from $35 originally TO THE NEW LOW PRICE OF $4.95.

**The new 1941 model now for sale includes the new unbreakable steel stamped piston giving high and perfect compression, drop forged one-piece crankshaft, extra long bronze bearing, etc.**

### SPECIFICATIONS

4 Port 2 Stroke Cycle. ¾" Stroke. 15/16" Bore. 300-7,000 R.P.M. Turns 14" Prop. 8" Pitch. Bearing Surface, 1¼" Long. Crankshaft, 5/16" Diam. Rotation, Either Direction. May be run inverted. 1/5 Horsepower. Class C under NAA Rules.

## G. H. Q.'s SIXTH YEAR!

**Thousands of Satisfied Users! Read some of these testimonials on file with us:**

J. B., Providence, R.I.—"A few weeks ago I received the G.H.Q. motor kit and it is running perfectly. I hope to write you soon and tell you about some excellent flights."

R. H., Prairie du Chien, Wis.—"Your motors sure can take a lot of abuse and knocking around and yet perform perfectly. I have had two in a period of about two years and have seen higher priced motors give less service and performance."

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W. L., Claysburg, Penn.—"A wonderful motor that thrills any air-minded person. Strong and neat looking. As good as motors costing twice as much."

A. K., Hillside, N.J.—"I still can't understand how you can put such a dependable and rugged engine on the market at such a low price."

E. T., Sayville, N.Y.—"Received my G.H.Q. Kit okay and am more than delighted with same. You've got 'em all beat for price and performance."

R. P., Hamburg, N.Y.—"I want to extend my personal thanks to G.H.Q. for their prompt service. The motor I ordered was received within 24 hours. Such service cannot be surpassed. I also want to say that I have the motor running perfectly. I shall do all I can to help promote the success of G.H.Q."

H. H., Midlothian, Ill.—"Motor assembled correctly and performs perfectly. I am fully satisfied."

We stock the following gas jobs, all of which have been successfully powered by the G. H. Q. Engine:

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| G. H. Q. Robotaire (5 ft.) | $2.95 |
| Comet Clipper (6 ft.) | 4.95 |
| G. H. Q. Sportster (6 ft.) | 4.95 |
| Red Zephyr (5 ft.) | 4.95 |
| Streamliner (6 ft.) | 4.95 |
| Mercury (6 ft.) | 4.95 |
| Buccaneer Std. (5½ ft.) | 5.00 |
| Miss America (7 ft.) | 5.95 |
| Musketeer Std. (6 ft.) | 5.95 |
| Commodore (6 ft.) | 6.50 |
| Super Buccaneer (7½ ft.) | 8.50 |
| Miss Philadelphia (8 ft.) | 9.95 |

and all others of from 4 to 10 foot wingspan.

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**Our new discount schedule gives larger dealer discounts than ever before!**

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We ship
**Collect C.O.D. for balance.**
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Class C, 15/16" bore, 1/5 H.P. Engine AT THE LOWEST PRICE IN HISTORY, OVER 35,000 IN USE TODAY!!

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This is identical to the G. H. Q. kit but with factory assembly and tune-up.

COMPLETE!! Includes full running instructions, wiring, coil, condenser, Champion plug, gas tank—everything you need except oil, gas, batteries and propeller. Fully Guaranteed.

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**1939 SALES OF G. H. Q. ENGINES AND KITS TOTALED 15,000**

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**BOMBS and TORPEDOES**

13/16" 2 for 5c
1¼" ..... 5c

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1⅛" ..... 5c

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**TORPEDO**

3" ..... 15c

**Dummy Motors**

1" 9 Cylinder 15c
1½" 9 cylinder ..... 25c

**Celluloid Motor Plate**

1½" .... 9c .... 5c
2" .... 12c .... 5c
2½" .... 14c ....
3" .... 17c .... 5c

**PURSUIT GUNS**

⅜" 2 for 5c
1" ..... 3c
1½" ..... 5c

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⅜" ..... 2 for 5c
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1⅝" ..... 5c
2" ..... 8c

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⅞" long ..... 5c

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1½" ..... 5c
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**Anti Aircraft Gun**

2" ..... 25c

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1½" Type B 20c
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3 to Set Set
Small ..... 9c
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**SEND 5c FOR CATALOG**

**Alum. Disc Rubber Tired Wheels**

½" dia. ..... 5c ea.
⅝" dia. ..... 6c ea.
¾" dia. ..... 7c ea.
⅞" dia. ..... 7½c ea.
1" dia. ..... 8c ea.
1⅛" dia. ..... 9c ea.
1¼" dia. ..... 10c ea.

**Treaded Tire Alum. Disc Wheels**

1 3/16" dia. ....30c pr.
1½" dia. ..... 40c pr.
2" dia. ..... 50c pr.

**AXLES**—Threaded & fitted with washers, bushings and nuts.

| Lgth. | 1/16 | 3/32 | 1/8" |
|---|---|---|---|
| 2-3-4-5-6" | .12 | .10 | .20 |
| 7-8-9" | .14 | .12 | .23 |
| 10-11-12" | .18 | .15 | .25 |

**Aluminum Disc Bal. Tired Wheels**

1½" dia. ..... 15c
1⅝" dia. ..... 18c
2" dia. ..... 20c

**Celluloid Balsa Wheels**

¾" .... 5c pr. .... 4c pr.
1" .... 7c pr. .... 5c pr.
1⅜" .... 10c pr. .... 7c pr.
1⅞" .... 14c pr. .... 10c pr.
3" .... 30c pr. .... 13c pr.

**Do-Nut Air Wheels Sponge Rubber Tires**

1" dia. ..... 10c pr.
1¼" dia. ..... 14c pr.
1½" dia. ..... 18c pr.
1⅝" dia. ..... 20c pr.
2½" dia. ..... 50c pr.

**Axle Fork & Swivel**

⅜" to ⅝" wheel 10c
¾" to ⅞" wheel 15c

**PROPELLERS**

| Standard DIE CAST 2 bladed | | Standard DIE CAST 3 bladed | | Hawk Type 2 bladed | | Hawk Type 3 bladed | |
|---|---|---|---|---|---|---|---|
| 1¼" | 5c | 1½" | 8c | 3¼" | 18c | 4" | 25c |
| 2" | 7c | 2" | 10c | 4" | 20c | 4½" | 30c |
| 2½" | 8c | 2½" | 15c | 4½" | 22c | 5" | 35c |
| 3" | 10c | 3" | 20c | 5" | 25c | 5⅝" | 35c |
| 4" | 12c | 4½" | 25c | 5⅝" | 30c | | |
| 4½" | 15c | 5" | 30c | 6¼" | 35c | | |

IMPORTANT—Minimum order, 50c. Add postage on all items but if over 15c on less than $1.50 order add only 15c. Orders over $1.50 add 10%; west of Denver 15%.

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airfoils. These are more or less average values for the range of speeds covered by models. There is some scale effect upon the maximum lift coefficient obtainable by airfoil sections. That is why it is inaccurate to use airfoil data developed for full-scale aircraft. Fig. 11-a demonstrates this scale effect. Notice that the lift coefficients are identical at angles below the stall, while the maximum lift coefficient is increased for large planes. There is also some effect of scale upon drag, but this has already been taken into account in fig. 1 of article 1.

From fig. 11, the maximum lift coefficient of the M-6 section is 1.1. Going back to fig. 10, the minimum velocity is found to be 17.7 m.p.h. Naturally, when the lift coefficient is maximum, the velocity is minimum. This is apparent when looking at the equation $\frac{W}{S} = .00256\ C_L V^2$. In order to keep the wing loading on the left constant, $C_L V^2$ must also remain constant. Therefore V is minimum when $C_L$ is maximum.

While a lift coefficient of 1.1 is possible from an M-6 airfoil, it is more wise to use 1.0, or one-tenth less as the maximum lift coefficient for gliding. You see, we determined 1.42 as the lift coefficient REQUIRED so that the model could glide at 15.6 m.p.h., but the M-6 will not give that lift coefficient. As a matter of fact, fig. 11 shows that none of the ordinary sections will give that lift coefficient. So we use 1.0 instead of 1.1 for the M-6 so that the glide will be somewhat below the stall. Here is the secret of gas model adjustment! Both theory and practice show that the minimum sinking speed is obtainable when the model is gliding steadily as slow as possible without stalling. Of course, model builders knew that before going into theory, but with the aid of these charts you can tell exactly how much change in performance will be obtained by certain design changes.

For instance, you will probably be very much interested in knowing just how much the sinking speed of this model, or any other model, will be increased because it has to fly at a $C_L$ of 1.0 instead of 1.42. Offhand, one would say that the increase will be large. Well, let's see.

Figs. 12 and 13 are two similarly constructed charts for determining the sinking speed of any model at any speed within the range of the scales. Fig. 12 gives the sinking speed due to the span loading, $l_s$, and Fig. 13 gives the sinking speed due to the parasite loading, $l_p$. By adding these two together, we get the total. Unfortunately, this writer has been unable to devise a means of getting the total sinking speed at any velocity from one chart. However, it is so simple to use figs. 12 and 13, that obtaining the sinking speed should be a matter of a minute or so; no more.

From fig. 10, the velocity for $C_L$ of 1.0 and wing loading of .875 lbs. per sq. ft. was determined as 18.6 m.p.h. This is 3 miles per hour more than the velocity at $C_L$ of 1.42. Looking at fig. 12, the sinking speed due to span loading at 18.6 m.p.h. is 1.06 feet per second. This at a value of $l_s = 0.108$, which was determined for the "Aristocrat" in article No. 1. From fig. 13, the sinking speed due to parasite loading is equal to 0.72 feet per second, again at V = 18.6 m.p.h. and for $l_p = 33.7$, again determined from article No. 1. Adding these, 1.06 + 0.72 = 1.78 feet per second . This is an increase of only 0.11 feet per second from 1.67 feet per second previously determined as the minimum. This is 6.6% increase, as compared to the 16% increase in speed, and 30% decrease in lift coefficient.

So the new minimum sinking speed is 1.78 feet per second, at a velocity of 18.6 m.p.h. and $C_L$ of 1.0. Should you wish to check on your usage of the charts, determine the minimum sinking speed from fig. 6, the velocity from fig. 7 and check against the sinking speed found from figs. 12 and 13. Thus, for our model, at 15.6 m.p.h., we get 1.26 from fig. 12, and 0.41 from fig. 13. Adding this, we get 1.67 feet per second, exactly what we determined from fig. 6. This will always serve as a check on accuracy.

Inasmuch as the maximum lift coefficient required to fly the model will invariably be greater than that actually obtainable from wing sections, it will be well to determine the actual minimum sinking speed from the figs. 10 to 13. In outline form, the procedure is as follows:

1. Determine maximum $C_L$ for wing section from fig. 11.
2. Determine velocity of model at a $C_L$ one-tenth (0.1) less than the max. lift coefficient, from fig. 10.
3. Get sinking speeds due to parasite and span loadings from figs. 13 and 12 respectively.
4. Add, and get the minimum sinking speed.

Up to this point, we have determined a great deal about the model's performance almost entirely without numerical computation, making large use of chart solutions of the formulae. Except for the article on propeller selection, the remainder of our discussions will be centered about the design and adjustment of the models in order to get maximum performance.

It has long been a question in the model builder's mind as to what airfoil he should select to get the most out of his model at a contest. From fig. 11 it can be seen that the variation in maximum lift coefficient is quite small for ordinary airfoils, and therefore, as has been demonstrated in this article, the effect on minimum sinking speeds is of course quite small. There are some other effects upon performance by using different airfoils, but it can safely be said that most common airfoils give similar results. In the next article the choice of an airfoil will be gone into more fully, as well as other design problems.

Some very good supplementary reading for those who find any terms used in these articles a trifle confusing are the "Physics of the Airplane" articles, by Lt. James and Willis L. Nye, starting in the August 1938, issue of MODEL AIRPLANE NEWS. Also, N.A.C.A. Technical Report No. 586 describes quite fully how the airfoil data at low speeds was obtained. It may be bought for fifteen cents by writing to the Superintendent of Documents, Washington, D.C.

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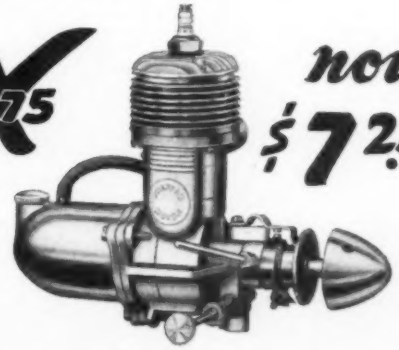

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## Air Ways

*(Continued from page 31)*

model won first place award with a score of 95 points, while Baum received 90 points.

Models were exhibited in the Assembly Hall and many who visited the exhibit expressed the thought that for a day Model Aviation put up some terrific competition by way of an attraction, from the standpoint of an educational and interesting show, to some of the other buildings and exhibits at the Fair. Models were displayed on hundreds of feet of tables which were jammed. A 44-foot soaring glider constructed by a member of the Air Hoppers Club, a trailer for towing model airplanes to contests, made by the Sky Scrapers Club of Brooklyn, and a Piper Cub Trainer, rounded out the theme of the exhibit. Alan Davydoff, vice-president of the Air Hoppers Club and Soaring and Gliding editor of "Air Trails" explained the workings of the glider and answered questions on soaring.

Radio-control model demonstrations were given by Cecil Winik of Radio Control Headquarters, Joseph Raspanti and Thracy Petrides. A display of Air Youth of America, with five model builders flying models, attracted a great deal of attention.

A luncheon was given in honor of aviation celebrities, aviation and model press; among whom was Mrs. Frank Hawks and leading pilots from the air lines. Dick Merrill, famous pilot, was pinch-hitting for Roscoe Turner who was involved in a serious automobile accident the week before and could not appear. The prizes were presented by Mr. Merrill at the Wonder Bakery where a special victory platform was erected. Also present at the ceremonies were: Don Mockler of the National Aeronautics Council, Swanee Taylor of the Flying Log, Stan Coe of the Model Airplane Club of the Air, Duke Kranz, flying reporter for the New York "Daily News," Ernest Gamache of Air Youth and John M. McCloud of Playthings magazine.

Three of the lucky winners received an invitation from Olsen & Johnson of "Hellz-A-Poppin" to see the show. They were: Henry Portz, Teed Westlake and Joseph Raspanti. Teed Westlake, Elihu Drukman, Robert Stewart and Harold Ohms appeared on a television broadcast; Teed, Elihu and Robert appeared as guests on the Sky Blazers radio program.

Each participant received a handsome Contestant's Certificate.

This competition was approved by the Academy of Model Aeronautics.

The competition was announced on the Sky Blazers coast-to-coast program over the Columbia Broadcasting System. Regulations discouraged almost entirely entries not in the vicinity of New York City, since it was required that each contestant bring his model to the Exposition two days before and come to pick up his plane on the conclusion of the Exposition. Were not this limitation imposed, it is very likely that the entire Fair might have been "swamped" with model airplanes.

The first place winners were:

Models up to 16" Wing Span: Junior, Eugene Martines, N.Y.C.; Intermediate, Ed McCarthy, Kirklyn, Pa.; Senior, Ralph Tancoroo, Paterson, N.J. Models Over 16" and Not Over 30" Wing Span: Junior, Henry Portz, Springfield, Ohio; Intermediate, Teed Westlake, Patchogue, N.Y.; Senior, Peter Seieskl, Cleveland, Ohio. Models of Any Wing Span Over 30": Junior, John Bretthaver, N.Y.C.; Intermediate, Michael Harche, Jersey City, N.J.; Senior, John Ogilvie, N.Y.C. Class A Gas: Junior, R. Hatschel, Flushing, N.Y.; Intermediate, Anthony Kay, Cliffside, N.J.; Senior, Louis Garami, Woodside, N.Y. Class B: Junior, Frank Schubet, Yonkers, N.Y.; Intermediate, Sal Taibi, Brooklyn, N.Y.; Senior, Francis Savarese, N.Y.C. Class C; Junior, E. I. Druckman, N.Y.C.; Intermediate, Morris Schames, N.Y.C.; Senior, J. Raspanti, Brooklyn. Future Design Contest: Junior, Thomas Francis, N.Y.C.; Intermediate, William Semph Jr., Quakertown, Pa.; Senior, Robert D. Stewart, New Rochelle, N.Y.

Picture No. 2 shows Teed Westlake's Seversky P-35 pursuit plane with the trophies it won. It is built to the scale of 3/4"-1'. The photo shows three of the four first-place trophies won by the model since its completion in May, 1939. The plane is of built-up construction and covered with sheet balsa. It has retractable landing gear, movable controls, navigation lights, landing flaps and cowl flaps, all operated from the cockpit. It is also equipped with a sliding cockpit covering, radio, seat and ear phones, throttle control, fire extinguisher, machine-gun sight and safety valve. Fourteen cylinders of the engine are of cast aluminum turned up on a lathe. The aluminum propeller was also cast and finished by the builder.

Another attractive model exhibited was the new Vultee Vanguard, shown in picture No. 3. This was not only a fine appearing model but was a flying model as well.


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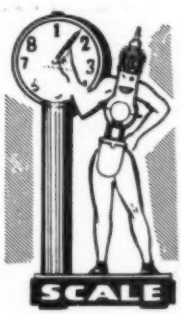


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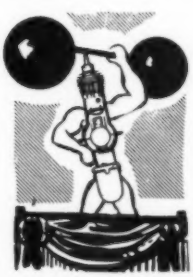

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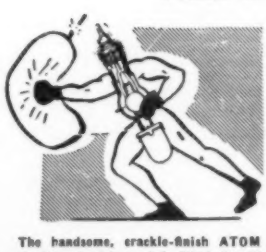

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- *Bore ⅞", stroke ⅞", displacement .526
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One of the winning models in the original design contest, as well as one of the most unique shown, is that in picture No. 4. It is an immense bomber built by Mr. Pogthress of Brooklyn. The unique thing about it is the idea of the little pursuit job which this bomber carries in a recess on its under side; the picture shows it clearly. As the bomber flies over its objective, the pursuit plane is released to ward off attacks. The bomber is "powered" with four dummy pancake engines which lie flat on the wing.

Another model event held at the New York World's Fair was Air Youth Day, featuring a novel balloon-bursting contest and other events in which more than one hundred contestants competed for a large variety of prizes at the Fair's Aviation Building on August 21.

Hailed as one of the most popular events that has been held at its aviation exhibit, the young aviators' attack on the balloon barrage drew hundreds of spectators, who watched the model fliers launch their ships at the balloons which had been strung along the field adjacent to the aviation exhibit. Other events of Air Youth Day included a glider throwing contest and non-flying scale contest.

Judges for the contest included: Winthrop Rockefeller, chairman of Air Youth; Grover Whalen, president of the N.Y. World's Fair; W. S. Allen, manager of the Aviation Exhibit; I. S. Randall, vice-chairman of the Transcontinental and Western Airways; and Captain A. J. K. Malone of the United States Army Air Corps.

Originated by Art Vhay, technical director of Air Youth, who acted as contest director, the balloon-bursting contest featured an attack upon a string of gas-filled toy balloons by any type of rubber-powered models which the contestants brought with them. Each ship was equipped for the attack with pins stuck in the leading edge of the wings and the models were hand-launched. The "mortality" among the balloons was terrific and the spectators were vastly entertained on the occasions when the ships got away for long flights, leading their owners to chase them in and among the Fair's pools and fountains.

One of the most successful of the contestants was Thomas Neubeck, a 13-year-old boy, who came in a wheel-chair, and with his father's assistance, succeeded in knocking down a number of the balloons.

Picture No. 5 shows the balloon-bursting contest in full swing; a model is in the air attacking a number of the gas-filled spheres. Contestants are lined up in the background.

Winners of the various events contest were:

Balloon Bursting Contest: Andrew L. Bush, 22-14 56th St., Woodside, L. I.; Arnold Wallace, 2000 7th Avenue, New York City; Howard Paris, 175 70th St., Brooklyn, New York. Glider Event: David Wilkinson, 126 Lowell Ave., W. Orange, N.J.; Calvin Crawford, 118 W. 115th St., New York City; Edwin F. Chobot, Jr., 3801 Conner St., Chattanooga, Tenn. Replica: Paul Warga, 56 Hausman St., Brooklyn, New York. Scale: Edward Carstens, 112-38 Delevan St., Queens Village, New York. Duration Flight: Adolph P. Swiezy, 150-12 29th Ave., Flushing, L.I.

Picture No. 6 shows Joe Walsh of 96 Willis Street, New Bedford, Mass., with his latest-design contest model. He says:

"As yet it hasn't been entered in any meets but has shown indications of being a consistent flier with a steady climb and slow sinking speed, due to its high aspect ratio, tapered wing and large stabilizer.

"The fuselage shape is based on Vernon Boehle's 1935 Wakefield model and is my favorite because of its low center of lateral area and simple clean lines. The best time I have made so far is a little over 3 minutes.

"The wing span is 60 inches with an average chord of 4 inches, the aspect ratio being 15. The dihedral is 5 1/2 inches. The total effective area of the Boehle-section wing is 225 square inches. It swings an 18-inch prop powered with 22 strands of 3/16" flat rubber."

Such a ship should have a beautiful climb and soar due to the high aspect ratio wings.

### Mississippi Valley Contest

One of the largest annual contests in the country is the Mississippi Valley Model Airplane Contest. This year the event was held in St. Louis, Missouri, on August 10th and 11th. Jim Cahill, renowned 22-year-old model builder from Connersville, Ind., was crowned Champion and Best All-Around Contestant. He was presented with the Victoria Award which goes annually to the All-Mississippi Valley Champion, at a dinner for contestants at the Hotel De Soto climaxing the twelve events of the mid-Western meet.

Cahill won first place in the Outdoor Stick Open Class at Parks Air College Sunday. Best St. Louis contestant, and winner of the much sought-after Stix, Baer & Fuller trophy, was Dr. Ray Podolsky, who placed first in the Gas Power Class B and C events.

Dark clouds and occasional showers failed to dampen the spirit of the contestants, but held the attendance to an estimated 5,500. The contest, jointly sponsored by Stix, Baer & Fuller and the Young Men's Division of the St. Louis Chamber of Commerce, drew approximately 500 contestants, some of them from as far as 1,000 miles away. Among those competing were three girls: Winnie Davis of Kansas City, and Pearl Samuel and Betty Jane Schaefer of St. Louis. The oldest contestant, John J. Marty of St. Louis, was 61 years old; the youngest ones, thirteen. Three father-and-son combinations—Lawrence Maze, Sr. and Jr. of St. Louis; S. R. and Gordon "Corky" Jackman of Little Rock, Ark.; and W. J. and Rex Presley of Little Rock, were among the entrants. Carl Goldberg competed, four days after his wedding, and the new Mrs. helped him carry home his trophy.

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Awards were presented to the winners at the banquet by Miss Frances Buss, star of the St. Louis Civic Theatre. Speakers included Lieut. James Kent Averill, commanding officer of the Naval Reserve Air Base in St. Louis; George Page, chief engineer at Curtiss Wright; Contest Director Robert H. Sommers; and John Jacobsmeyer of the Aviation Committee of the YMD Chamber of Commerce.

Publicity Director H. H. Kolmar again received full co-operation of newspapers and radio stations. Results follow:

Indoor Cabin (Senior and Open): Jim Cahill, Connersville, Ind., 15:19.4; Milton Huguelet, Chicago, Ill., 13:55; Richard Obarski, Chicago, 13:07.5. Indoor Stick (Senior and Open): Walter March, Chicago, 17:38; Jim Cahill, Connersville, 15:51.4; Alvie Dague, Tulsa, Okla., 14:40.6. Outdoor Stick (Senior): Milton Huguelet, Chicago, 512.7; David Campbell, Chicago, 477.5; James Broderick, Chicago, 436.0. Outdoor Stick (Open): Jim Cahill, Connersville, 584.7; Wally Simmers, Chicago, 430.7; Joseph Matulis, Chicago, 349.3. Senior Cabin Event: Harvey Gorrell, Mexico, Mo., 493.5; Art Beachler, East St. Louis, Ill., 380.7; Arthur Beckington, Rockford, Ill., 325.0. Open Cabin Event: Roy Wriston, Tulsa, 369.5; Ed Lidgard, Chicago, 349; Herman Plesse, St. Louis, 348.5. Open Gas A Event: Carl Goldberg, Chicago, 543.8; R. E. Podolsky, St. Louis, 298; B. Rother, Kirkwood, Mo., 221.25. Senior Gas B Event: Art Beachler, East St. Louis, 502.1; Jean Seele, Topeka, Kan., 467.75; Bob Wright, Topeka, 387.3. Open Gas B Event: R. E. Podolsky, St. Louis, 476.75; Eugene Foxworthy, East St. Louis, 362.0; Truman Stevens, Kansas City, Mo., 304.7. Senior Class C Event: Bob Wright, Topeka, 783.4; David Kneeland, Kansas City, 497.79; John A. Ditch, St. Louis, 367.5. Open Class C Event: R. E. Podolsky, St. Louis, 988.25; William Ruegg, St. Louis, 586.25; John Fedora, Granite City, Ill., 472.5. Flying Scale: Ed Petkus, Cicero, Ill., 83; Haines Schoenky, Kirkwood, 78; Charles Bleitner, St. Louis, 76. Taw Line Glider: Charles Bleitner, St. Louis, 232.1; Herman Plegge, St. Louis, 126.3; Vernol Ely, St. Louis, 119.9. Junior Stick: Charles Juergens, St. Louis, 138.2; Kenneth Halstenberg, St. Louis, 116.2; Bill Nieman, St. Louis, 112.8.

Picture No. 7 shows Dr. Ray Podolsky of St. Louis receiving the Stix, Baer & Fuller Grand Award.

Occasionally we have run pictures of models incorporating the original ideas of builders. This month Leonard Malott of 492 Bellefontaine Avenue, Marion, Ohio, sends us picture No. 8, which is his conception of a tailless fighter. It is supposed to be an interceptor pursuit, powered with a 1500 h.p. inline engine turning two propellers in opposite directions. It has a fully retractable tricycle landing gear and embodies an armament of four machine guns in the wing, with a cannon firing through the nose.

This little ship is unique and represents an ideal military plane provided it could be built with sufficient stability. This is questionable but not impossible. The model as designed probably wouldn't have sufficient stability for safe operation. Nevertheless designers are experimenting with this


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type of ship and have had fair results with them, provided the wings are sufficiently swept-back and incorporate an extreme negative angle of incidence at the wing tips.

Congratulations, Leonard, for winning this month's $5 award for the best originally-design model!

One of the most realistically posed models that we have received is shown in picture No. 9. It is a Waco C-6 built by Paul Marchal Jr. of 126 10th Street N.W., Cedar Rapids, Iowa. It is posed to represent a large ship about to take off from an airport; and one has to look at it twice to determine if it is actually a model. However its wing span is only 60 inches and incorporates movable controls and flaps operated from the cockpit, tail wheel, built-up instrument panel and a dummy Wright "Whirlwind" nine-cylinder containing almost 600 separate pieces. The model was built from William Wylam's plans, appearing in MODEL AIRPLANE NEWS. Materials for the cylinders were disks of cardboard and balsa sheet. Pine-heads simulate crankcase bolts. This plane was entered in two local contests this spring and won top honors in both. We compliment Marchal on his remarkable piece of work.

## Coming Events

The Mahoning Model Club will hold an official A.M.A. contest at the Baun Farm Airport, Youngstown, Ohrio, on October 20th from 10 A.M. to 6 P.M. Motors and other prizes will be awarded. For full details write H. L. Kirchner, 2700 Market Street at Indianola, Youngstown. Mr. Kirchner is sponsor of the Mahoning Club, which is divided into a "rubber" and "gas" group. The club has a special workroom with one, main, long bench at which about 40 builders can work. They are permitted to work any time of the day or night and can leave their materials in the workroom without fear of their being molested by anyone. This appears to be unique in the annals of model aviation and should serve as an example to model builders with capricious inclinations!

## Harrisburg

Lawrence Cook of 620 South 20th Street, Harrisburg, Pa., won the MODEL AIRPLANE NEWS Award for first place in the Rubber Event at the first official model airplane meet held at the Harrisburg Airport. Dr. J. Clarence Bachman was contest director. Dr. Bachman is in charge of model aviation for the Harrisburg Exchange Clubs who sponsor such activities. An unusual event was the Best Crack-Up Event, for which a consolation prize was given. It was won by Robert Foreman of 606 Peffer Street, Harrisburg.

## The World's Biggest Bomber

*(Continued from page 15)*

later be made available to the entire industry. Wing construction consists of pressed flange ribs and extruded section stringers. This structure is covered with 24 ST "Alclad" aluminum alloy sheet flush riveted throughout the forward third portion of the wing section.

The tail surfaces are of full cantilever design, the stabilizers being of metal-construction sheet-Alclad covered and the movable surfaces of metal construction fabric-covered. Both trimming tabs and compensating movable surfaces are employed. Straight hinge line and control surface balance design has been incorporated into one by the use of an inclined hinge line. The vertical and horizontal stabilizers are of similar construction to the wing surface and are fixed at zero angle of incidence to the center lines of the airplane.

The landing gear represents one of the greatest individual aircraft engineering problems in recent years but was solved through the sheer use of simplicity and great size. The nose wheel is mounted directly under the pilots' cabin and swings to the rear where the opening is closed by hinged metal doors. The problem of torque and anti-shimmy was a large one insofar as the wheel alone weighs 480 pounds. The main landing gear wheels are the largest wheel and tire assembly ever constructed for commercial usage, the wheel being eleven feet in diameter and containing more than a thousand pounds of rubber and tire fabric. The largest aircraft pnudraulic shock strut ever designed takes the landing gear load. Retraction requires only the swinging of the wheel inboard into the recess provided, there being no plates or coverings required.

The hydraulics system of the giant bomber represents the largest, most powerful, and perhaps the most complex system as yet devised. Its uniqueness lies in the fact it is a two thousand pound system, twice that used in present day ships, and the fact that it operates more units than have formerly been employed for the purpose. The control booster system is a part of the general hy-

draulic system and represents the first time such has been employed in aircraft. The actual workings of the booster system defy description but its principle varies only slightly from that of the automatic pilot design although in detail and object the two have little in common. Main purpose, however, is to reduce the pilots' control efforts in effecting the handling of this monster to that of a conventional size airliner. A slight pressure on the control wheel works through the booster system and operates the desired control with a much greater energy than that imparted by the pilot. The main landing gear wheels, nose wheel, nose wheel retracting plate, bomb bay doors, landing flaps, brakes and control system are all operated from the hydraulic system. A separate electric engine is employed to run the hydraulic pump, the largest ever built, and the various valves, controls, and units are entirely too numerous to mention.

The electrical system is of the 24-volt double wire type, energy being furnished by an individual generator run by an independent motor. All lighting, including landing lights, control switches, safety cut-outs, hydraulic pump engine and radio and navigational equipment utilizes this flying electric plant for energy. Conventional batteries, however, are used for the engine ignition systems.

The fuel system of the XB-19 consists of over two miles of piping of seven different sizes and its cut-out, by-pass and control gadgets require a special chart mounted on the Chief Engineers' table for operation. Fuel is carried in inegral wing tanks and conventional fuselage tanks in the total amount to 11,000 gallons. The main inter-tank fuel pump as safety valves are run off the electrical plant while individual engine pumps are mounted on each engine accessory drives.

The regular crew of the Douglas XB-19 will be made up of ten men although four times that number could easily be carried. Commander of the ship, whose rank will never be under that of Air Corps Captain, is located in a special office within the cabin just forward of the wing leading edge and within sight and conversation of the flying crew. His duties will parallel closely that of an ocean liner captain, that of coordinating and directing the crew and its work of handling the ship. Second in command will be the Chief Engineer, whose office is "across the hall" from the Commander, and who will actually control the functioning of the plane itself irrespective of direction, attitude of flight and air handling. All engine throttles, landing gear controls, flap controls and accessory controls will be mounted on his table and shelf and under his continued jurisdiction through a mission. Third in military command yet first in actual control, is the Pilot in his familiar location at the left side of the cockpit. Flight controls only will be under his hands and he will take his flight orders directly from the Chief Engineer. Fourth will be the co-pilot and navigation officer-radio operator who will function hand-in-hand in assisting the pilot in the work of flying the ship. In the extreme nose of the giant bomber is the bombardment officer who controls no guns but only the newly developed secret bomb sight. He will take his orders directly from the Ship Commander and when approaching


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**FOURTH** Lancaster Gas Club July 14th Lancaster, Pa.

**FIFTH** Broomall Gas Club Aug. 31st Broomall, Pa.

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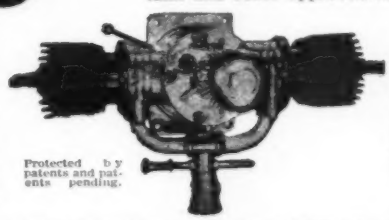

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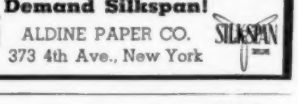

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the target will actually give orders to the Chief Engineer and Pilot for purposes of lining on the target.

Below and behind him is the nose gunner located within the familiar Douglas "eyeball" gun turret which, however, has been greatly modified and improved from that used on the B-18A medium bomber. He will be equipped with a single 50-caliber movable machine gun. Mounted high atop the fuselage amidship will be the main upper gunner whose special turret houses a new-type 37-millimeter aerial cannon. It will be his job to protect the entire upper hemisphere from the attacks of enemy fighters and he will be trained especially for turret work with this lethal weapon. The belly gunner will have two stations to watch, both located within sliding apertures in the rear belly of the ship. His work will be done with a single 50-caliber machine gun of the quick detaching type which may be moved between the two stations in a matter of seconds. In the event of emergency the service-officer (who may permissibly be an enlisted man) may also aid him with an additional gun. This service officer will be the "Chief Stooge" insofar as the handling and dispensation of ammunition, first aid, messages and mechanical work is concerned. He will take orders from whoever gives them.

Our last crew member is the sting in this giant hornet's tail for he is located in the extreme aft end of the fuselage under the rudder. This rear gunners implacement will be quite similar to that used on the new B-23 medium bomber by the same company although his quarters will be much more spacious. The same movable 50-caliber machine gun and fixed gun sight type of armament will be installed. (You figure that one out!)

This crew will naturally be a very flexible organization and can quite easily and efficiently be augmented to 14 or 16 with separate and distinct duties assigned to each.

Bomb load of the XB-19 under full load conditions will be 18,000 pounds, all mounted horizontally within the central bomb bay located between the two inner wing panels. Four racks of twin displacement capacity will be provided to accommodate this great load and four of the giant one-ton aerial torpedoes will be carried in addition to over five tons of fragmentation and demolition bombs in varied assortments depending upon the objective to be destroyed.

Power is supplied by four of the new experimental Wright double-row radial air-cooled motors developing 2,000 horsepower each for take-off. Due to the fact that these huge engines were made available, the necessity for the use of six engines, as originally planned, was avoided. Four-bladed all-metal constant-speed controllable-pitch propellers of seventeen feet diameter will be used to hurl this monster through the sky.

It was never planned that this giant bomber might break any speed records and present specifications call for a speed of only 200 miles per hour. However, the 7,000 mile range of this huge ship, the purpose for which it was basically designed, would enable it to fly from Los Angeles to Europe and return to New York non-stop.

A special crew is now being trained at Wright Field to handle the job of taking aloft the world's biggest bomber on its maiden and subsequent flights.

While some controversy has raged as to the military value of a bomber of this size, its complete vulnerability to anti-aircraft fire, its lack of speed and its extreme costliness, resident U. S. Army Air Corps officials in a statement made to the press during the course of General H. H. Arnold's inspection of the XB-19 stated: "Plans are already being made for a still larger 'flying battleship'!"

Unfortunately, due to the confidential and restricted nature of this project, we have been unable, due to War Department censor, to give you all of the available information on this giant. However, a detailed description would require a thousand pages or more and thus we have given you only a sketch of the real size and power of the Douglas XB-19 Bomber. We will however, promise you more of our information on the "World's Biggest Bomber" as soon as it is okayed by the War Department.

## Frontiers

*(Continued from page 21)*

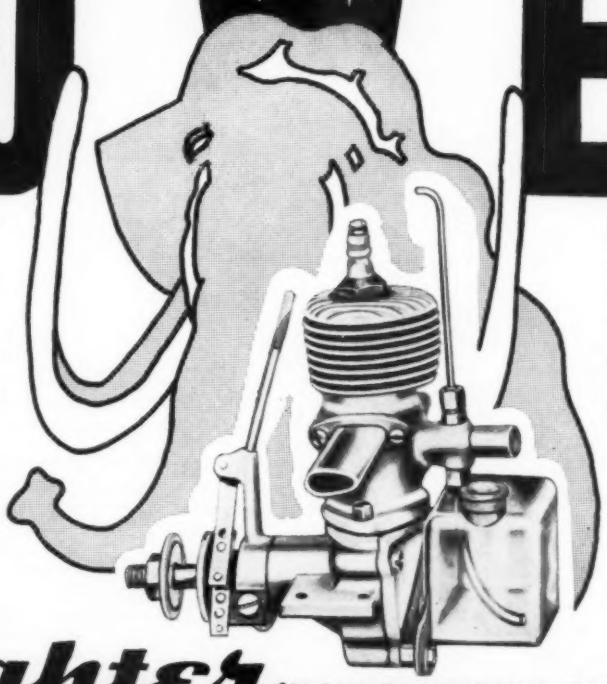
chest would sink in a sea of red. One bullet might puncture the oxygen equipment or, perchance, hit a pressure fire extinguisher bottle in the pilot's cockpit, and then the pilot would be swimming in a world of carbon dioxide. A rigid oil line may be punctured or an engine-control rod may be sliced in half, putting the engine on the well-known "blink." We could mention many more particulars that would render the airplane useless.

However there is one good feature about the peacetime airplane; the possibility of structural failure is very remote unless the enemy may be able to design a very large caliber aircraft cannon with exploding bullets. Many of our Lockheed Hudsons in the present war have been pounded by anti-aircraft shells and have reached home safely though with gaping holes in their structure. Thus it is feasible to contend that the engineer is satisfied with the airplane's structural qualities and must consider bullet-proofing in other respects.

Instigating this new medium into the design is not merely a process of armor plating the airplane until it resembles a battleship; there is much more to it than that. The all-important requirement that the airplane should fly after it is built still stands. It is a relatively simple matter to remove the dangers of enemy onslaught mentioned above, and if this "design for war" movement is promoted in the right way the American pilot and his gunners should be the safest military pilots on earth. Now comes the big question . . . here it comes . . . just how is all this going to be accomplished?

We will cite a few instances. The English are using a rubber inner "tank" to store their fuel, and at the present moment the leading rubber manufacturers in this country are working overtime to produce a better bullet-proof compartment than the other fellow. The principle is this . . . When the bullet pierces the sponge-like rubber, the rubber closes in around it and if any leak does occur, it is very slight. If gas fumes should seep into the other parts of the wing structure igniting will be prevented by coating the interior of the wing

# POWER



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with a certain chemical substance that will form a film around the bullet as it enters, just as if it were wrapped in Cellophane! Practical tests along these lines have been very successful. As to the health of the gunner it appears as though gun turrets are on their way out as fast as they came in. (From a model builder's standpoint that is not very good news because the tear-drop glass gun turrets gave detail to the airplane as well as giving it a more militaristic appearance.) Even though the latest bombers have tail gun turrets, they will disappear as well as the nose turrets. Machine guns and aircraft cannon will be operated by remote control from some secluded spot in the fuselage. A system of mirrors or the like will form the gun sights.

Fuel, oil, electrical and other lines must be placed in the airplane so that they are least likely to be hit by bullets. Many companies are using flexible Neoprene, a synthetic rubber compound, for oil and fuel lines in order that they may "give" away from the bullet, and thus not be punctured. In other words, the entire mechanism inside a military airplane must be so arranged that it is out of gun-fire, yet easily serviceable and of light weight. In some parts of the airplane steel plating may be employed or even aluminum shielding. All this means just so much more for the aeronautical engineer to worry about. It means that he has met with the true realism of war and must do everything in his power to make the airplanes that guard our country superior to all in every respect.

We are glad to see that the government has not issued orders to the airplane manufacturers to "make one type of airplane until you are blue in the face." As a matter of fact, the designs will be more plentiful than ever, and we are not fooling. The person who likes to look at brand new military airplanes will be in his glory. We will predict here that before the end of this year or at the early beginning of next, there will be as many as ten different types and makes of pursuit-interceptors under test! One, for instance, may be the Vultee P-48. All of them will be for the U. S. Air Corps. Of course the U. S. Navy and foreign demands will bring out even more.

Howard Hughes is said to be really going in deep on a new pursuit plane with the formation of a factory that will be here to stay this time, we hear.

The Hall Aluminum Co. is building a huge plant in Dallas, Texas and should have something interesting to take the air. It is rumored that North American will build a plant there also, and then Randolph Field ferry pilots will not have so far to go to get new equipment. Another new company to add to your list is that being formed by Lawrence W. Brown, noted race-plane designer. As yet he has not stated what type of airplane he will build.

Almost at the same time our rantings on how badly the U. S. Air Corps needed twin-engined trainers were published, Cessna, of Wichita, Kansas, received the first order for U. S. Air Corps training planes. They will be similar to their present twin-engined sportplanes. AT-8 is the designation.

Vultee is said to be busy with a new Allison-powered three-place attack ship under test. Douglas has been doing con-


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Skein .55
3/16 10 ft. .05
1/4 Tubing ft. .05

**WIRE**

6-8-10-12-14
2 ft. .01
1/16 3 ft. .12
.050 3 ft. .05
3/32 5 ft. .15
1/8 5 ft. .25

**CAMEL HAIR BRUSHES**

Sm. .03; Lge. .05
Extra large .. .08
Flat, large.... .10

**WASHERS**

1/8 or 1/4, doz. .01

**BUSHINGS**

1/16 4 for .01

**PLASTIC BALSA**

Large can .... .25

**SPONGE WHEELS**

1", .15; 1 1/4" .18

**CELLULOID**

6x8 .05
12x16 .19

**ALUM. TUBING**

1/16, 3/32, 1/8, ft. .07
3/16, 1/4, ft. .10

**SHEET ALUM.**

.0004 2 sheets 3c
.005 6x6 5c
.010 6x6 6c
1/32 6x6 15c

**BAMBOO PAPER**

White 2 for....15c
Colors each....10c
Sandpaper doz. 5c

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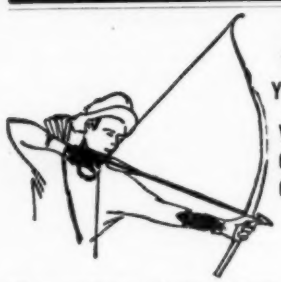

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CK-1 Craftsman Archery Construction Kit: Consists of extra selected 5 ft. 6 in. hickory stave shaped to bow outline for making flat bow pulling as much as 40 lbs. Seven Port Orford Cedar shafts with brass parallel points attached and string nocks cut. Ground base feathers to feather shafts; feathering jig; cement; flax string; leather for handle; illustrated instructions.....**Price $2.75**

CKL-1 with lemonwood stave instead of hickory. .....**Price $3.25**

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**WOODCRAFT CONSTRUCTION CO., INC**

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**"Everything in Archery"**



# MODEL AIRPLANE BUILDERS

**WHITFIELD** has developed a new BAMBOO TISSUE for GAS JOBS that can be applied

***WET or DRY***

of Superior Quality—Has great strength—Easy to Apply. **Gives a Smooth Silk Like Finish.**

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***Established 1869***

**WHITFIELD**

BAM-BOO TISSUE

**PAPER WORKS** [EST. 1869] **76 VARICK ST., NEW YORK, N.Y.**


siderable test flying of the latest version of the well known DB-7. It has a twin rudder tail of very clean design. The stabilizer has the usual dihedral and the rudders, being perpendicular to the stabilizer, are therefore toed in. A new power plant seems to be in the nacelles but no other important change in design is apparent. The very slickest twin-engined bomber that we have ever seen is taking turns with the Douglas on the runway at Los Angeles Municipal Airport. It is North American's new B-25 medium bomber, and we have yet to see a better airplane built. It now takes the place of the DB-7 light bomber as being uppermost in our admiration. Next month more details.

Here is some extra special news that we will try to squeeze in before press time. . . . Lockheed is said to be working NOW on a new version of their twin-engined interceptor that is guaranteed to do over 500 m.p.h.; yes over 500 m.p.h.! They are going to install two of the brand new Wright TORNADO, liquid-cooled engines that will be Wright's latest contribution to the industry!

Interstate has been a parts manufacturer for some time and has just recently entered into the manufacture of light planes. The prototype very much resembles the Piper Cub and will be known as the "Cadet." Extensive consideration has been given the tandem cabin accommodations. The only emphatically new feature is the use of spring clips to hold the fabric to the tail surfaces, which is helpful in manufacture and maintenance. Top speed is 114 m.p.h. with a 65 hp. engine and 105 m.p.h. with a 50 hp. power plant. All dimensions and weights follow the usual light plane trend with a wing loading at 6.91 at full load.

Mr. Howard G. Heindell, who has spent much of his time in organizing aircraft companies, is a director of another new one: the Allmetal Aircraft Co. of Alhambra, California. He was the instigator of the Argonaut light amphibion and later aided in the development of the Alliance two-place low-wing sportplane. His new Allmetal product appears to be an improved design of the latter and from advanced notices it promises to be an excellent little airplane. Of low-wing design with fixed landing gear and a crew sitting in tandem in an enclosure, the trim lines of the airplane are very compact and well proportioned. A Menasco engine appears to be in the nose and the airplane is designed to compete in the trainer business. The founding of any company, aviation or otherwise, is no simple task, and comparatively few ever meet success. But we are glad to see that we have men in the industry who do not give up hope but keep on trying. We wish Allmetal Aircraft the best. No performance data of the little plane has been obtained as yet.

So much for new ventures and the eventual forthcoming designs. Our next item is on the cloud-blistering Vought-Sikorsky single-seat fighter. Vought tried to enter this fighter business once before with the purchase of a Northrop design and sent the prototype through South America with little success. That was at the time when the South Americans were buying German and Italian planes. The main point about this new Vought-Sikorsky, designated the XF4U-1, is that it has shown a definite change in policy of the U. S. Naval Air Service. For a long time the navy has been conservative in its fighters and has equipped them with small engines, making them minute in size, very maneuverable and easy to handle on aircraft carriers. Now the navy has piled all the horsepower it could possibly get into the nose of the single seater—no less than an 18-cylinder Pratt & Whitney R-2800 engine! If the navy purchases them in quantity it will be way ahead of the army in high powered, single-engined single-seaters. The engine develops 1850 hp. at take-off which ought to be enough to satisfy any navy pilot. It should also give the airplane the capacity to break a number of the existing speed records, but what it can do in the way of maneuverability is of still greater speculation. An interesting thesis for a graduating aeronautical engineer would be on what is the most practical horsepower for a single-seat fighter? We can keep on piling horsepower into these little ships, but it would soon get as ridiculous as giving each gob his own private destroyer. The R-2800 is perhaps not too large an engine, though, but it is doubtful if our government forces will ever use much over 2,000 hp. in a single-seat fighter. It does give the pilot good "hurry home assurances" when attacked by waves of enemy craft. This new 9,000 lb. baby will be operated from our carriers and its 40 foot wing, no doubt, can be folded for storage. (Incidentally, the latest is that we will have 35 aircraft carriers when the present naval expansion program is completed!)

We do not believe in gull, low-wing airplanes, but the XF4U-1, as it is designated, is of that type and has a good appearance. The leading edge of the gulled section between the retractable landing gear provides intake ducts for the cooling of the carburetor and oil system, there being no scoops around the engine cowling. The construction of the entire plane is allmetal with a monospar wing and an advancement towards a more fully monocoque fuselage. The outside skin is spot-welded to give extra-smooth qualities, as is the usual Vought-Sikorsky feature. A three-bladed Hamilton Standard Constant-speed Hydromatic propeller whirls in front of the pilot who sits in a small enclosure atop the fuselage. (Unfortunately a forced landing recently put the airplane out of practical use.)

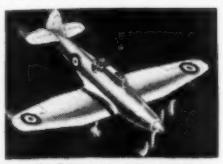
In the power plant category we have Guiberson with a new Diesel engine that has gained for itself an Approved Type Certificate. It is rated at 310 hp. for take-off and is the most progressive step yet made in the development of the oil-burning aircraft engines. The company is building 100 or more Diesel engines of similar design for war tanks and thus has become an established concern. Known as the Guiberson Diesel Engine Co., it operates from Chicago and plans several higher horsepower engines in the future.

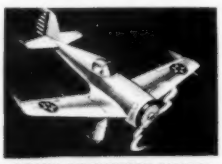
One of Glenn L. Martin's forthcoming bombers will be powered with two very large engines turning four-bladed propellers. It will be a high-mid-wing job with the fuselage circular in cross-section. Could that mean that it is for the substratosphere? There are the usual amount of gunners, including a tail gunner.

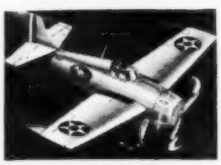
# 12 New Military Models by GUILLOW *of*

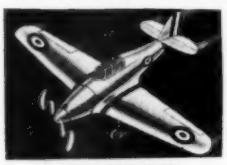
## Planes that are making Air History

Fighters—Interceptors—Trainers—Pursuits—Scouts


BOULTON PAUL "DEFIANT"


CURTISS INTERCEPTOR-FIGHTER


GRUMMAN F4F-3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NORTH AMERICAN TRAINER

FAIRCHILD PRIMARY TRAINER

BELL PURSUIT P-39

VULTEE VANGUARD 48

CURTISS P-40

SUPERMARINE "SPITFIRE"

REPUBLIC PURSUIT

BREWSTER FIGHTER

Realistic scale models of superior design and materials. Outstanding U. S. and British planes, with detailed markings and insignia.

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**PAUL K. GUILLOW** Wakefield, Mass.


Here is something for the dimension mongers: The Douglas B-23 has a wingspread of 92 ft., a length of 58 ft. and a height of 18 ft.

The $30,000,000 order recently received by Vega from Great Britain is for high-speed twin-engined bombers that will do well over 300 m.p.h. The airplanes will be known as the Lockheed-Vega Model 37 and will be larger than the Lockheed Hudsons now being delivered to Great Britain. The design of these bombers will be much different from the Hudsons though they are offsprings. The order for these planes was sub-contracted by Lockheed to its subsidiary, Vega Airplane Co.

The world's most heavily armed, fastest and most versatile two place fighting plane now is being produced in considerable numbers at the Republic Aviation Corporation plant.

It is the new "Guardsman" dive-bomber, capable of releasing 1350 pounds of high explosive bombs simultaneously, while hurtling earthward at speeds in excess of 370 miles per hour. This bomb-load includes one projectile weighing 750 pounds and six 100 pound wing bombs. The giant fuselage bomb is cradled in a special displacing machine, developed by Republic, to permit release of the bomb with accuracy in a near vertical dive. This mechanism insures that the released bomb will clear the propeller.

The "Guardsman" is also armed with two 30 calibre fuselage guns, synchronized to fire through the propeller, and a flexible 30-calibre gun mounted in the rear cockpit. This latter weapon is rotatable and can be fired by the gunner over a wide range in all directions forward, rearward, to either side, or above or below the airplane.

With the bombs removed, the plane becomes an effective pursuit interceptor to attack opposing bombers or other aircraft. It is powered by a Pratt and Whitney Twin-Row Wasp engine. Because of restrictions imposed by outside sources, the maximum speed of the plane cannot be given but it can be said to exceed 300 miles per hour.

The "Guardsman" has probably the greatest range of any American fighter aircraft, the maximum being 1800 miles with permissable fuel overload. As an interceptor it can climb to 3000 feet in the first minute and has a service ceiling above 30,000 feet. (See picture in FLASH NEWS.)

The new deBothezat Helicopter was developed by the late Dr. George deBothezat, helicopter pioneer and built in Long Island City, N.Y., by the Air-Screw Research Syndicate (also known as the Helicopter Corporation of America).

The first flight of this craft, completing over two years of experimentation, took place in Long Island City on May 9th. During the test the ship was anchored to the ground by short lengths of rope, in the event of an unexpected maneuver, but it arose vertically, hovered and then descended vertically.

Two rotating sets of air-screws of three blades each provide the lifting power. One set of rotors is situated above a 4-cylinder Franklin engine and the other below, directly above the tiny one-place teardrop cabin. The engine does not revolve with


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Thank you for your confidence.

DIAMOND.

**BALSA WOOD**

| 36" Lengths | Per 100 |
|---|---|
| 1/32x1/16 | 10c |
| 1/16x1/16 | 10c |
| 1/16x1/8 | 20c |
| 1/16x3/16 | 25c |
| 1/16x1/4 | 27c |
| 3/32x3/32 | 25c |
| 1/8x1/8 | 30c |
| 1/8x3/16 | 50c |
| 1/8x1/4 | 55c |
| 1/8x3/8 | 65c |
| 3/16x3/16 | 50c |
| 3/16x1/4 | 60c |
| 1/4x1/4 | 85c |

**BALSA SHEETS**

| 36" Lengths | |
|---|---|
| 1/64x2, | 10 for 20c |
| 1/32x2, | 10 for 15c |
| 1/16x2, | 10 for 18c |
| 3/32x2, | 10 for 21c |
| 1/8x2, | 10 for 23c |
| 3/16x2, | 10 for 32c |
| 1/4x2, | 10 for 42c |
| 1/2x2, | 10 for 75c |

If 3" widths are desired, double price of 2" widths

**BALSA PLANKS**

| 36" Lengths | |
|---|---|
| 1x1, each | 6c |
| 1x1½, each | 9c |
| 1x2, each | 15c |
| 1x3, each | 20c |
| 1x6, each | 35c |
| 1½x1½, each | 25c |
| 2x2, each | 25c |
| 2x3, each | 35c |

**CLEARCEMENT**

| | |
|---|---|
| 1 oz. bot. dz. | 40c |
| 2 oz. bot. dz. | 65c |
| 1 pt. 40c 1 qt. | 65c |
| 1 gal. | $1.75 |

**CLEAR DOPE**

| | |
|---|---|
| 1 oz. | doz. 36c |
| 2 oz. | doz. 60c |
| 1 pt. 35c 1 qt. | 60c |
| 1 gal. each | $1.50 |

Thinner & Banana Oil same price

**COL'RED DOPE**

| All Colors | |
|---|---|
| 1 oz. bot. dz. | 50c |
| 2 oz. bot. dz. | 75c |
| 1 pt. 40c 1 qt. | 70c |

**American Tissue**

| | |
|---|---|
| White, doz. | 17c |
| Colored, doz. | 20c |

**BEST BAMBOO**

| | |
|---|---|
| 1/16x¼x15 dz. | 9c |
| 1/16sq.x12 gr. | 10c |

**MACHINE CUT PROPS.** per doz.

| | | | |
|---|---|---|---|
| 5" | .20c | 6" | .21c |
| 7" | .30c | 8" | .35c |
| 10" | .45c | 12" | .60c |

per pr.

**M & M AIR WHEELS** (For rubber powered models)

| | |
|---|---|
| 1¼"-1¾"-1½" | .35 |
| 1⅝"-2"-2½". | .40 |
| 2¼"-2½"-2⅝"-2¾" | .45 |

**THR BEARING**

| | |
|---|---|
| sm. dz. 6c gr. | .55 |
| lg. dz. 7c gr. | .65 |

**PARA RUBBER**

| | |
|---|---|
| 225 ft. skeins | 40c |
| ⅛ flat | 40c |
| 3/16 flat | 65c |
| Per lb. | $1.20 |

**WASHERS**

| | |
|---|---|
| ⅛ or ¼, 100 | 8c |

**Shafts or Rear Hooks**.....doz. 6c

**SHEET ALUM.**

| | |
|---|---|
| .002 thick, 5" | 35c |
| .005 thick, 5" | 50c |
| .010 thick, 5" | 75c |

**ALUM. TUBING**

| | |
|---|---|
| 1/16 O.D., 5" | 25c |
| 3/32 O.D., 5" | 28c |
| ⅛ O.D., 5" | 30c |
| ¼ O.D., 5" | 43c |

**WIRE, per 100 ft.**

| Straight Lengths | |
|---|---|
| No. 6 | 22c |
| No. 8 | 27c |
| No. 12 | 32c |
| No. 14 | 37c |

**BRASS BUSHINGS**

| | |
|---|---|
| 1/16 dia., 100 | 12c |
| 3/32 dia., 100 | 15c |
| ⅛ dia., 100 | 18c |

**SHEET CELLULOID**

| | |
|---|---|
| 12½x16, ea. | 19c |
| 6x8, doz. | 65c |

**SPRING STEEL WIRE**

(In five (5) foot Length)

| | |
|---|---|
| 1/16 dia. | .25 ft. for .25 |
| 3/32 dia. | .25 ft. for .50 |
| ⅛ dia. | .25 ft. for .85 |

**PNEUMATIC WHEELS**

For Gas Models With Valves

| | |
|---|---|
| 3½" | pair $1.30 |
| 4" | 3 pair for 3.30 |
| 4½" | pair 1.50 |
| | 3 pair for 3.90 |

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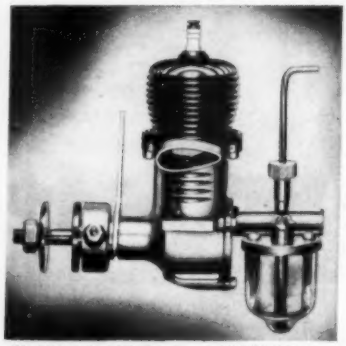
# New World's Records by BANTAM



Displacement .1997 Cu. In. Weight 3.1 oz.

FLASH—Joe Beshari established a new senior AMA Class A record at Hudson Valley Championship Meet, August 25 at Poughkeepsie, N.Y., averaging 999 seconds (16:39) for three flights. Best single flight—38:01. Bantams also took second, third, fourth, sixth, eighth, and ninth places.

*—ALSO—*

**FIRST**, second, fourth, fifth, seventh and tenth in Senior Class A at 1940 Nationals.

**FIRST**, second, third and fourth at Fourth Annual Quaker City Invitation Meet, Philadelphia.

**FIRST**, to eighth places, American Legion Championships, Hadley Field, New Brunswick, N.J.

**FIRSTS** at All Eastern Championships, Nazareth Gas Meet, and meets throughout the country.

The records speak for themselves. Bantam is the motor you HAVE to use to compete in Class A this year. Order direct or from your dealer .....

**$16.50 PP**

**MINIATURE MOTORS COMPANY, Inc.**

362 High Street, Nutley, N. J.


the air-screws, which are 14 feet in length, but revolve in opposite directions to offset propeller torque.

The deBothezat is the first true helicopter of its type developed. It is of totally different design than the newly developed Vought-Sikorsky Helicopter.

Additional flight experiments will be undertaken in the near future to iron out the rough spots.

Another interesting bit of news was the first public showing of the new Pitcairn Autogiro, which adds initial vertical ascent to established autogiro characteristics of vertical descent, slow safe flying and "roadability." This flight was made at Willow Grove, Pa., on July 26th with Fred (Slim) Soule at the controls and military and press observers watching. The machine accomplished a "jump take-off"—by jumping 25 feet straight up before proceeding forward. The take-off is obtained by speeding the rotor of the machine to a rotational speed about 50 per cent more than normal 200 r.p.m., while blades of the rotor are held in the "no lift" position. As the pilot declutches the engine from the rotor an interlocking machnism permits the blades to assume their lifting angle. Simultaneously over-speeding and assumption of the "lift" position causes the machine to rise vertically for approximately 25 ft. The demonstration machine, a Pitcairn PA-36 model, was a 2-place, side-by-side cabin autogiro powered with a 175 hp. radial engine, housed within the all-metal fuselage to the rear of and below the occupants.

## A Flying Messerschmitt Pursuit

*(Continued from page 25)*

blade that has been broken to a sharp point for this operation. Once a stringer has been attached to one side always place another in the corresponding position of the other side to avoid pulling the body out of line. Pieces of hard 1/16" sheet cemented between the stringers provide the anchorage for the bamboo pin that holds the rubber motor in the rear.

As indicated on the plan, the front portion of the fuselage is "filled-in" with pieces of very soft 1/16" sheet. Individual pieces of balsa are cut so as to fit snugly within the space between the formers and stringers. An exception is that section of the nose over which the radiator is later placed. The extreme front of the nose is shaped from four pieces of sheet that have been cemented together. As shown, the center of the nose piece is cut out to receive the nose plug. Cement this nose block to former No. 1 and when dry cut and sand the entire fuselage front to an accurate, smooth shape. Make the radiator front from 1/4" sheet; the shape is indicated on the first page of plans. Very soft 1/32" sheet is used to complete the radiator which extends back to bulkhead No. 3.

Special members to which the wings and landing gear are attached are cut from hard 1/16" sheet; two are required. They fit over the bottom keel and stringers and are cemented to the backs of formers No. 3 and No. 4. These members serve the purpose of providing a sturdy mount for the wings and landing gear and they are designed to assure the correct wing incidence and dihedral.

The wire landing gear should next be formed. To insure accuracy a full-size lay-out of the gear should be made. Note that the wheels toe out at an angle of about 5 degrees; also notice how the struts sweep forward when viewed from the side. Bend the struts from a single piece of .040 music wire. The struts are attached to the member provided for that purpose by binding with thread. Apply several coats of cement to the thread wrappings and over the wire and surrounding wood parts. A wire landing gear of this type, if carefully made, will take all of the punishment normal flying can give it. The strut covers and wheels are attached later.

### Wing

Both the right and left wing panels are shown full size on the plan. 1/32" sheet is used for all of the ribs with the exception of W-1 which is cut from 1/16" thick stock; two of each are required. Cut the ribs and sand them smooth. Notches for the spars and leading edge must be cut with accuracy to insure a neat job when completed. Assembly can be done directly over the plans. Pin the ribs to position and then cement the leading and trailing edges and the 1/16" square spars to place. Tips are made from 1/8" sheet. When dry, remove from the jig and cut and sand the edges and tips to their final shape.

### Tail Surfaces

To improve the flying qualities of our model it has been necessary to increase the area of the tail surfaces. Both the stabilizer and rudder are constructed in a similar manner: A complete frame is made first, using 1/16" sheet for the outlines and 1/16" square strips for the spars and ribs.

When dry, this frame is lifted from the plan and then very soft 1/16" square strips are cemented to both sides of each rib. These pieces are cut and sanded to a streamline shape once the cement has hardened and the leading and trailing edges are sanded to blend with the streamline shape also.

### Covering

To properly prepare for a neat covering job the entire frame must first be sanded thoroughly to eliminate all flaws and roughness. Our original plane was colored deep blue and red with black and white trim; however, the real war planes are camouflaged. Colored tissue is best suited for this job since it is both attractive and light in weight. Cover the fuselage first; grain of the paper should run from nose to tail. Banana oil or thin dope is used to stick the tissue to the frames. Numerous small pieces of paper must be used to prevent wrinkles but the individual pieces should be lapped neatly. The nose and other wood parts should be covered with tissue also. Cover the wing and tail surfaces using a separate piece of tissue for each side of each unit; grain of paper runs spanwise. Bottom of the wing from W-1 to W-3 is not covered at present. Tips, etc., require individual pieces, too. The parts are lightly sprayed with water to tighten the tissue but they are not doped


**6 GREAT DELUXE SOLID SCALE MODELS NOW $1.00 EACH POSTPAID**

**MESSERSCHMITT 109—BELL AIRCOBRA**
**HAWKER HURRICANE-CURTISS HAWK 75**
**GLOSTER GAUNTLET—GRUMMAN F3F-2**

Kits contain cut to outline shape, wings, fuselage, pants, tail surfaces, etc., insignia, metal paper, full size plans, aluminum cowls. Wing spans up to 20 inches. Photo shows our Bell Aircobra.

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18" BALSA STRIPS Select, Hard Stock
1/16 sq. ..... 60, 5c
1/16x1/8 ..... 35 for 5c
1/16x3/16 ..... 18, 5c
1/16x1/4 ..... 15 for 5c
3/32 sq. ..... 30, 5c
1/8 sq. ..... 30 for 5c
1/8x3/16 ..... 12 for 5c
1/8x1/4 ..... 10 for 5c
3/16 sq. ..... 8, 5c
1/4 sq. ..... 6 for 5c
1/4x1/2 ..... 3 for 5c

18" Balsa Sheets
1/64x2 ..... 6 for 10c
1/32x2 ..... 9 for 10c
1/16x2 ..... 8 for 10c
3/32x2 ..... 7 for 10c
1/8x2 ..... 6 for 10c
3/16x2 ..... 3 for 8c
1/4x2 ..... 3 for 9c
1/2x2 ..... 2 for 11c
3" & 36" cost twice 18": 3x36, 3 times.

NOSE BLOCKS
1x2x1 ..... 1c
2x2x1 ..... 2c
2x2 1/4x1 ..... 3c
3x3x1 ..... 4c
3x3x2 ..... 7c
3x3x3 ..... 9c
5x5x2 ..... 17c

5 FOOT BALSA
1/8x3/16..12 20c
1/8x1/4 ..... 10 20c
3/16 sq.... 8 20c
1/4 sq..... 6 20c
1/4x1/2 ..... 3 20c
3/8 sq..... 2 20c
1/2 sq..... 2 20c
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3/4x1 1/4x10 ..... 2—5c
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White, Red, Yellow, Orange, Blue
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1 1/4... 1 1/2—40c
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Gas Mod. 2 3/4—$1
3-1.25—3 1/2-1.50
4 1/2-1.75

M&M WHEELS
1 1/4... 1 1/2... 1 3/4—50c
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Gas. Mod. 2 1/2—90c
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3"- 4c- 7c- 9c
6"- 5c- 9c- 8"-35c
7"- 6c-12c- 9"-35c
8"- 7c-15c-10"-35c
9"- 8c-19c-11"-35c
10"- 9c-23c-12"-35c
12"-10c-28c-13"-35c
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3 sheets..... 5c

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1/4x1/2 ..... 15c ft.
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MUSIC WIRE finest quality
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.020 .028 ..... 6 ft. 3c
.034 .040 ..... 6 ft. 6c
.049 ..... 6 ft. 8c
1/16" ..... 3 ft. 5c
3/32" ..... 5 ft. 15c
1/8" ..... 5 ft. 20c

WHEELS per pr.
Bren Bisa A Celu L
1/2 .01 .03 U
3/4 .02 .04 .05 M
1 .03 .05 .07 .06
1 1/4 .04 .07 .10 .08
1 1/2 .06 .10 .16 .12
2 1/2 .12
3 .15 .30

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2 1/2" 14c, 3" 17c
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until the model has been assembled.

## Assembly

The various parts are now assembled. Fit the notches of the first two ribs of each wing panel to the special wing mounts. If the structure has been made with accuracy, the incidence of each side will be exactly the same and the wing tips will be elevated to the correct dihedral. In the event that a small error is apparent, the structure can be altered slightly to obtain the desired alignment. Once the position of the wings is satisfactory, they are cemented fast. Tissue is next applied to the uncovered sections of the wings. The small 1/32" sheet wing fillets are placed in position; it is advisable to make a paper pattern fit exactly to your plane before cutting the ones from sheet balsa. Once the fillets are in place, they are covered with tissue of the same color as the fuselage. The small opening between the wing and fuselage on the undersection is simply covered with tissue. Off-set the rudder so the model will glide in right circles; tissue fillets are used at the junction of the fuselage and rudder. The plans show how the stabilizer halves fit to the slot in the rudder. Cement the stabilizer parts to place. Check continually to assure correct alignment of all parts. Thin balsa or bamboo struts are used to brace the stabilizer. Moisten any wrinkles in the covering and permit to stretch tight before applying a coat of clear dope to the entire model.

The numerous small details are completed next. Rubber tubing of about 1/8" diameter is slipped over the landing gear struts. Balsa wheels of the correct diameter can be purchased or they can be made from laminated discs of balsa. Cement bearings to each wheel so they will revolve smoothly and then color dope the centers and tires. A small washer soldered to the end of each axle holds the wheels in place. Covers, which hide the landing gear, when retracted, are made from 1/32" sheet and they are covered with colored tissue to match the wing covering. The cockpit enclosure is made from thin celluloid. Make paper patterns of the correct size before cutting the celluloid; avoid cement smears. Frame outlines of the enclosure are represented by thin strips of tissue doped to place. Control surface outlines are thin strips of black tissue that have been doped to the surfaces. Other markings such as the swastika—National Emblem of Germany—the crosses, etc., are made from colored tissue. Addition of a tail wheel, exhaust ports, radiator detail and the numerous other details will improve the model's appearance.

## Propeller

A hard-balsa block 7/8" x 1-1/2" x 7-1/2" is required for the propeller. Shape

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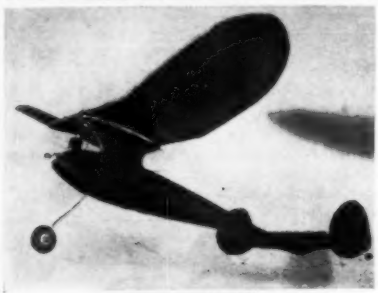

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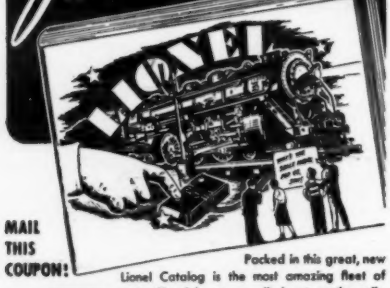


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the blank as shown and then carve a righthand prop. Cut the back face of the blades first; a bit of under camber is desirable. Reduce the front of the blades to the desired thickness. Shape of the blades can be determined from the photos. Apply several coats of clear dope with light sanding between each to produce a smooth finish. Make the spinner in two pieces and cement to the sides of the hub. It is advisable to use some simple free-wheeling device to help improve the glide. A washer is glued to the back of the propeller to make it revolve freely.

The removable nose plug is shown on the plan. A disc of 1/32" plywood is used for the front portion and a piece of very hard balsa for the back. Drill a small hole through the center and cement washers to both sides to fix the line of thrust. .040 music wire is used for the propeller shaft. Slip the nose plug, several washers and the propeller on the shaft in the order given. If a winder or free-wheel device is to be used, bend a loop in the end of the shaft; otherwise bend the end at a right angle and force into the hub.

Eight to ten strands (four or five loops) of 1/8" flat, brown rubber are used to power our model Messerschmitt. Lubricate the rubber strands and then wipe off the excess to prevent splashing the sides of the body. Hook one end of the loop to the prop shaft and drop the other end through the body. It may be necessary to remove a small portion of the covering in the rear to aid in fitting the bamboo pin into position to hold the rubber strands.

### Flying

It is, indeed, very seldom that a model will fly perfectly from the start, so it is evident that the success of any model is usually determined by the builder's ability to analyze and correct improper flight attitudes. Now, that statement does not infer that this model is especially hard to adjust and fly; for on the contrary our Me-109 was made to fly excellently with but a few minor adjustments.

The following suggestions can be made to aid in making your ship fly properly: To begin with, your testing grounds should be free from trees and other "model catchers" that might damage the plane before it has had an opportunity to demonstrate its ability. A field with tall grass or deep weeds is best. Try a few shoulder-height glides to detect any error in balance. In all probability a small weight in the nose will be required to obtain the desired results. Wind the rubber motor about 50 turns and try a power flight. Right- or left-thrust will make the model circle as desired and a slight amount of down-thrust will correct a tendency to mush or stall while under power. Gradually increase the number of turns as the flights become more satisfactory. Stretch the rubber strands about 2-1/2 times normal length and use a mechanical winder for real flights. Our test model was adjusted to fly in a large left circle while under power and it glides to the right. It is capable of making flights of nearly a minute.

## Academy of Model Aeronautics

*(Continued from page 32)*

for an approaching contest, an additional 12c in stamps should be included for air mail postage, or 6c for first class postage.

Rubber model flyers renewing their licenses receive the same set of credentials that new rubber flyers get. This includes a bronze Academy flyer's pin, an official license card, complete set of official rules and regulations, a colorful red, white, and blue contestant's sticker which can be applied to a windshield, and a supply of official registration certificates, one to be attached to each of the rubber models built and flown by the licensed flyer. In addition, the flyer receives a three-color decal of the official Academy emblem containing the N.A.A. wings to signify the Academy is a division of N.A.A., a flaming torch to signify the Academy's interest in extending research work in model aerodynamics and the words "Academy of Model Aeronautics" surrounded by six stars to signify the six years required to set the Academy up on its present basis. The lapel pin is a miniature of this large emblem decal.

Gas model flyers upon acquiring a new or renewed license, in addition to the decal emblem and the red, white, and blue contestant's sticker, receive a copy of the existing rules and regulations, a silver A.M.A. lapel emblem, registration certificates to be placed on gas model planes, and a set of either 2-1/2" or 4" license number decals.

Leader members of the Academy, including those who apply for the contest directorship, receive a handsome certificate of membership suitable for framing. This 8-1/2" x 10" certificate is embossed with a gold seal and carries the signatures of the officials of the Academy, in addition to specifying the type of membership, either scientific, administrative, or industry, that has been conferred upon the applicant by the Academy's Board of Admissions. Leader members also receive a copy each month of the Academy's bulletin, *Model Aviation*. Any of these leader members who have paid the dues of $2 per year may secure without charge a rubber or gas model license if they so desire. Those obtaining the gas model license at no additional cost must, however, pay an additional $1 if they desire the insurance coverage. Application forms for rubber or gas model licenses and leader membership or contest director appointment may be secured from the Academy of Model Aeronautics headquarters, Willard Hotel, Washington, D.C. A 3c stamp should be enclosed with all requests.

### Academy Issues New Contest Manual

A new contest manual, the first booklet of its type to be issued by the new Academy of Model Aeronautics, is available at cost price to model aviation leaders throughout the country who are desirous of conducting model aircraft competitions.

The manual is unique in that it represents the view of the more than 300 leader members of the Academy who were invited to share in its compilation. Among the features to be found in the manual are sections on how to secure publicity for model meets, how to secure prizes, best methods of running various events, how to secure special

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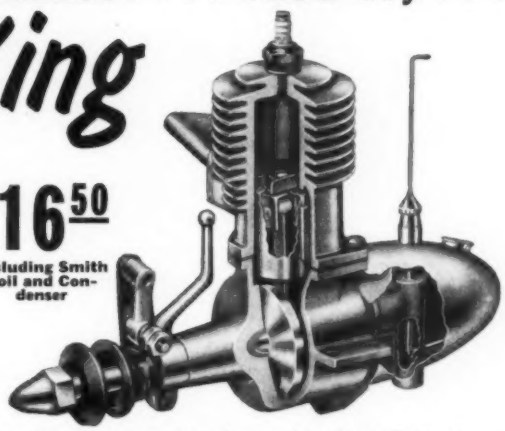

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hotel rates, and so on.

This is, of course, in addition to the regular features which one might expect to find such as the official rules and regulations and their interpretation, contest procedure and other facts so important to model meet sponsors and directors. Every modelplane group and all aeromodeling leaders will find a copy of the new Academy manual of great assistance in servicing the activity which they so generously sponsor and direct.

Complete information concerning the new manual may be secured from the Academy of Model Aeronautics headquarters, Willard Hotel, Washington, D.C.

### Club News Releases

Chapters of the Academy have increased so in number and extended their activities to such an extent that it has become almost impossible for the A.M.A. to give complete coverage to the activities of each individual chapter.

For that reason, at this time Academy officials are making the request that model chapters desirous of news stories concerning their club meetings and contests should send such information and photographs directly to this model publication rather than to Academy headquarters. In the Academy's monthly bulletin, *Model Aviation*, news of novel events or activities of such interest to all other leaders will be included.

However, with the hundreds of competitions being sponsored under Academy sanction each season, it is well-nigh impossible to give as much recognition in the form of stories to each affair. It is for this reason that club publicity directors are urged to send a complete article on each meet as well as other club activities such as exhibitions to the editor of this magazine.

### Contest Board Welcomes Suggestions

The new Contest Board of the Academy, which has been set up under the chairmanship of Bruno P. Marchi, well-known model airplane designer and flyer, is anxious to know what model builders think of the existing regulations governing the flying of model aircraft in the United States.

The Board will also welcome suggestions for future regulations and extends an invitation to all serious-minded aeromodelers to pass along their comments and proposals. Communications to the A.M.A. Contest Board should be addressed to Academy Headquarters at Washington.

### Has Your License Expired?

Officials of the Academy of Model Aeronautics would like to call your atention to the expiration date on your rubber or gas model license. It is imperative that you do not permit your license to expire, since it greatly facilitates work at Academy headquarters when applications for renewal are made somewhat in advance of the expiration date. Therefore, it is suggested you check the expiration period on your license card at this time.

Gas model flyers, upon renewing their licenses, will be given the same license number they now hold. If by any chance this is not done, the A.M.A. head office in the Willard Hotel at Washington, D.C., should be notified immediately.

### Academy Monthly Bulletin Proves Popular

The official bulletin of the A.M.A. is its *Model Aviation*, which is a mid-month news pamphlet sent to all leaders and chapters. Printed by off-set method, it is an outgrowth of the old *N.A.A. Eagle*. In no way does the publication conflict with or duplicate the material appearing in the established model aviation press. The object of *Model Aviation* and its prime function is to


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**MANUFACTURERS, Dealers.** For sale: tracing for five foot gas model, ideal for kit. Send 50c for sample drawing and details. Lawrence Reithmaier, Oak Forest, Ill.

**FREE**—Gas model kits with purchase of all popular make motors. Highest motor trade-in allowances. Write immediately for lists. Master Modelcrafters, Terre Haute, Indiana.

**AEROLANDIA**—Rivadavia, 968-Buenos Aires (Argentine) dealers of model aircraft construction, kits and supplies, interested as representatives for South America.

**DEALERS,** Clubs, Schools, new list with amazing offers now ready. Send name and address to Dealers Supply, Station "P", Box 4, Brooklyn, N.Y.

**MOTORS,** New and Used. Motors repaired or exchanged. Motor Parts. Highest price paid for your old motor. Send your inquiry before you buy and save money. Huber, 50 Tariff St., Sayville, New York.

**UP TO $5.00** for your old motor. Write, giving description of your old motor and type of new engine desired, for liberal trade in allowance. United States Model Airplane Co., 44 Oakland Terr., Newark, N.J.

**AIRCRAFT ILLUSTRATIONS**

**AUTHENTIC** Detailed Aircraft Sketches. 9½" by 12¼". Send 10c for sample and catalogue. Craft Art Company, Dept. 10M, 246 Fifth Avenue, N.Y.C.

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THE *ONLY* American-made tissue for rubber-powered jobs is "Silkspan 00." Experts call our "GM" best for gas models.

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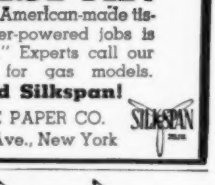


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**707 W. Poplar St., York, Pa.**

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bring official news to its contest directors and club sponsors.

Many kind comments have been received during the period *Model Aviation* has been issued and with the cooperation of those who have made technical contributions to the publication it is expected that its value will grow as time goes on.

### Contest Board Reports

Since it is the duty of every competition director to send in to the A.M.A. Contest Board an official report of each meet he directs, it gives us a great deal of pleasure at this time to turn the tables on that august body and ask it for a report on what it finds new in the realm of model aviation, especially in the competition line.

To bring you an authoritative report, we take you to the office of Bruno P. Marchi, Chairman of the A.M.A. Contest Board. Let's see what the well-known technician has to say about who is doing what in the realm of competition flying and research work:

"The enthusiastic support of the A.M.A. safety campaign is evidenced by the increasing number of licensed flyers. These flyers, realizing that they are supporting a cause which is fundamentally one of keeping model flying in the hands of the modeler, since they are demonstrating that they can take care of matters best, are responding to the call which was sent out recently from A.M.A. headquarters. Along with this increase in the number of licensed flyers the contest board notes that there is also an increase in Academy sanctioned contests—and with the increase in contests the Contest Board is being deluged with new record applications.

"It was very interesting to hear from Carl A. Hopkins, contest director, from Clarksburg, West Virginia, recently. Mr. Hopkins stated that his boys as well as himself never gave a thought previously to the possibilities of establishing new records since it was always believed that records were made in flat country where the planes remained in sight of the timers for a much greater length of time. Carl's problem, it seems, is the rolling hills which abound in West Virginia, for the planes always fly out of sight of the timers behind these obstacles.

"To climax his letter, eight new applications for records were received and there is a possibility that all will be accepted by the Contest Board.

"In keeping with the spirit of more and better competitions, an unusual contest was recently sanctioned by the Contest Board, one which Charles Hesse directed in the Chicago area. The Windy City Gas Model Club was scheduled to have flown versus the Gas Model Aeronauts. This club type of competition seems to be gaining in favor and it has been found to stimulate better competition and teamwork for the clubs that are flying.

"The R. O. W. article which appeared in a recent issue of the Academy publication *Model Aviation* has evidently struck home down in Florida, for Rupert Keene reports that on September 8 a competition was held where the contestants had an opportunity to fly both upon land and upon water. Lakeland Land-and-Hydro Academy Record Trials will no doubt result in popularizing the relatively unknown rise-off-water type of competition and should pay ample dividends by presenting the Academy with new national records.

"In connection with outdoor flying, E. N. Angus, contest director from Oaklyn, N.J., recently presented in the *Jersey Flyer*, a very newsy publication published monthly by the South Jersey Gas Model Association, what in the estimation of the club should be the proper color schemes for easy identification of lost outdoor model airplanes. It has been found from experience that blues and reds are hard to see, especially from the air, should one try to locate his model by flying a plane over the spot. White, yellow, and orange were found to stand out and gave excellent contrast against any background.

"An announcement has been received at Academy headquarters from Jesse Bieberman, erstwhile indoor advocate, concerning the record trials which were planned for the latter part of September for those who wanted to take a crack at the remaining indoor endurance times. So far, Merrick S. Andrews of Philadelphia has been able to create an enviable endurance time for the indoor stick hand-launched models of 23 minutes, 31 seconds. Unconfirmed reports from Philadelphia stated that Andrews was grooming several new indoor planes for a long shot at a new indoor record of 30 minutes. It has always been the axiom of indoor models that 30 minutes will some day be an eventuality.

"The August record trials which Jesse Bieberman conducted resulted in the smashing of nine indoor records. It is very interesting to note that as the outdoor R.O.W. models are becoming more and more popular, an increasing number of indoor R.O.W. models were flown at these trials.

"A very sizeable collection of famous model builders was at the indoor trials, proving that indoor models are still as popular as ever as far as the expert contestant is concerned. Among those present was the model building team, Frank and John Zaic; J. P. Glass, well-known model airplane design authority; Roger Hammer; Frank Haynes; Merrick S. Andrews; Dave Call; Herbert Greenberg, who came all the way from Hartford, Conn., and many other well-known expert contestants in the New York and Philadelphia areas.

"The cooperation of the navy was tops in that all arrangements which were made by Jesse Bieberman aided in making the record trials such a success. Since the navy requires that a list of names be given to them prior to any of these record trials, it was suggested by Jesse Bieberman that all those who are interested in flying at Lakehurst contact him so that they will be kept informed of all future events of this type."

### Flash News

*(Continued from page 33)*

a deep ravine.

Quietly, the air corps is building its first underground fighting plane hangar, base and fuel storage "somewhere on Oahu" Island in Hawaii. A full squadron of fighting planes, crew and equipment will be stationed there upon completion early next year.

The complete facilities of the 9th Bombardment Group including 26 Douglas B-18 (original smooth nose) bombers and 1,718 men have been transferred from Hamilton Field, California, to Fort Douglas, Salt Lake City.

THE INDUSTRY:—EXPANSION! EXPANSION! EXPANSION! That's the news from the industry this month. CONSOLIDATED: Major Reuben Fleet, president of Consolidated Aircraft Corporation of San Diego, California, presided at the dedication ceremonies of a huge new two million dollar addition to the Lindbergh Field plant which brings to approximately 2,000,000 square feet of floor space under cover and makes Consolidated the "largest integrated aircraft plant" in the U. S. And immediate plans for the erection of an additional $800,000 structure was announced during the dedication of the giant addition! Consolidated's present backlog: $132,000,000! Acquisition of the assets, machinery and equipment of the Hall Aluminum Aircraft Corporation of Bristol, Pennsylvania, was recently announced.

DOUGLAS: Plans for a $20,000,000 expansion program which will include the construction of additional facilities at the Santa Monica and El Segundo Divisions of the firm and the erection of a third giant plant at Long Beach (California). Leveling and grading of the 142-acre Long Beach site is well under way. Santa Monica additions will include the erection of two large structures on the West end of the plant and the cutting through of the airport surface and runway of a small hill at the east end of the plant. El Segundo improvements will include the addition of a 10-acre tract including a large structure, hangar facilities and a runway adjoining the Los Angeles Municipal Airport mile-long runway system. Completion of the program will bring to 3,110,000 square feet of floor space retaining Douglas' lead as the LARGEST AIRCRAFT FACTORY IN THE ENTIRE WORLD! In addition, there will be more than one million square feet of uncovered storage area at the three plants. Recent new equipment at the Santa Monica Division includes three rubber forming pads used in blanking sheet metal by the Guerin process, each more than 13 feet long and weighing about 4,000 pounds each! Travel, shipping and transfer between the three plants will be by air!

MARTIN: Plans for a giant addition which will more than double production on their light attack-bomber are well under way. Total employment will near 37,000 within the next year, which will mean hiring more than 24,000 men. Present backlog of the company, including both Air Corps and foreign orders, stands at $110,000,000. A new type bomber is being readied for the Royal Air Force.

LOCKHEED: Plans for a new extension of the firm's Burbank facilities are in the hands of construction engineers. Present backlog stands at $169,845,415, of which 135 million is British. More than 1200 "Hudson" Bombers are on order. Recent orders include six "Lodestar" 14-passenger transports for Trans-Canada. Subsidiary VEGA expects its huge Union Air Terminal (Burbank) factory to be ready for occupancy by the first of next year. Production will get under way immediately on the North American NA-35 light low-wing all-metal trainer which has been purchased lock, stock and barrel from N. A. A. In addition, the Unitwin light private plane will be further developed and put into production. Backlog now stands at $30,789,671, the majority of which is Lockheed sub-contracting work on P-38 interceptor parts and Hudson bomber details and sub-assemblies.

VULTEE: Plans for the issuance of $1,500,000 worth of par $1 stock to finance planned expansion and reorganization are progressing. The assets of Barkley-Grow Aircraft of Detroit have been purchased in addition to those of Stinson Aircraft previously announced. It is planned to utilize the new Nashville, Tennessee, plant of Stinson to produce Vultee trainers and fighting planes.

BOEING: Recent completion of Plant No. 2 has given this firm some freedom for mass production plans on the $23,000,000 order for Douglas DB-7B light attack-bombers for the British Royal Air Force. The Reconstruction Finance Corporation has recently approved a $10,500,000 loan to further expand facilities to take care of the huge bomber order. More than 500 have been tentatively optioned by the Air Corps. Production on Blackburn "Skua" British Navy dive-bomber is progressing in the Canadian plant of the firm. Forty have been completed and dispatched to England.

EXPORTS totaled $138,388,046 in the first half of 1940, the greater portion of which went to France and later re-routed to England. This figure is 17% greater than the entire year of 1939 and 102% more than all of 1938. The second half of 1940 is expected to far exceed this figure.


**NEW GRUMMAN F5FI SKYROCKET FIGHTER**

24" Span. Length 17". Weight 3 oz. Actual Photo of Model

A sensational new scale model of the Navy's fastest fighter. The model flies well, using two 7" propellers. Const. set contains all parts printed on balsa, two 2½" turned balsa motor fronts, two 7" carved props, wheels, insignia, colored dopes grey and yellow, glue, full size scale drawing, and all parts. Const. set, postpaid..... $2.95

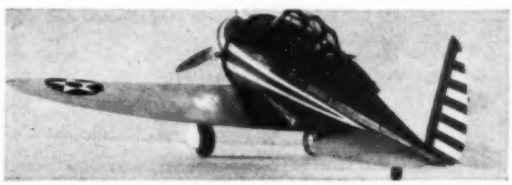
**NEW TAYLORCRAFT SPORTPLANE**

36" Span. Length 22". 1" Scale. Weight 2 oz.

Taylorcraft Model on Floats

**COMBINATION LAND AND SEAPLANE SET**

A beautiful exact scale flying model with unusual flying range, so light it will rise from land or water in 6 feet. Const. set contains all parts printed on balsa, carved propeller, hardwood wheels, 2 oz. white dope, ½ oz. black, glue, full sized scale drawing, and all parts to build, and parts to make floats. Set p.p..... $1.50



32" Span. Length 25". 1" Scale

**REPUBLIC P41 PURSUIT**

A new deluxe model armed to the teeth with special equipment.

Const. Set

**$4.25**

Only model on the market carrying full fighting exhibition equipment, lights, etc. Const. set has all parts printed on balsa, set of blue and yellow paints, glue, etc., insignia, full size drawing, and all parts. Special exhibition equipment of six 1¼" and one 3" die cast aluminum bombs, one 2" ring type cast machine gun cockpit type, two wing type searchlight bulbs with wires, and twin instrument boards.

***New Catalog No. 6—10c***

Beautifully illustrated 7½" x 9½" 16 page catalog showing large photos of Army and Navy Fighters, Gas Motors, Gas Models, etc. Get yours today. 10c coin.

**MINIATURE AIRCRAFT CORP.** 83 LOW TERRACE STATEN ISLAND, N.Y.

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**WHO DEMAND THE BEST!**

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## CHAMPIONSHIP
**CEMENT and DOPE**
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| Black | India Red | Cream |
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**CLEAR DOPE, THINNER, WOOD FILLER**

**¾ oz. Bottle 5c**
**1¾ oz. Bottle 10c**
**½ pint Can 35c**

**Wood Filler, Pearlene Dope ½ Pint 45c**

We have been pioneers in advocating the use of lightweight model dopes. Our dope can be easily applied with a brush to give a smooth even finish.

All Berkeley Cements and Dopes are absolutely the finest obtainable. They have won practically every finish contest held in the East during the past two years.

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Our cement is guaranteed to be stronger and tougher than any model cement available. One tube will convince you.

| Big ⅝ oz. Tube | Giant 2 oz. Tube |
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| **5c** | **10c** |

## A Complete Range of Berkeley Propellers

8" to 15" DIAM.

**AIR SCREW SPECIALS**

Formerly 25c. Bass wood, smooth, natural finish props. **15c ea. P.P.**

**AIR SCREW DELUXE**

A really superior prop. gum-wood, beautiful lacquer finish. **25c ea. P.P.**

6 to 14 INCH **35c EACH**

Proven:—The best by Test at The Nationals.

The Most Popular Prop at the Nationals and used by most winners there.

## BERKELEY
**MODELS, INC.**

230 STEUBEN ST. BROOKLYN, N.Y.


AIR LINES: The airlines experienced their worst disaster in history with the crash of Pennsylvania Central Airlines' big Douglas DC-3 airliner in which 25 persons including Senator Ernest Lundeen of Minnesota, pilot Lowell Scroggins, co-pilot J. P. Moore and stewardess Margaret Carson lost their lives.

It was the first fatal accident on American airlines in one year, five months and five days and the first in the 13-year history of P. C. A.

T. W. A. has awarded a contract to the Wright Aeronautical Corporation for 111 Wright "Cyclone" radial air-cooled engines developing 1200 horsepower each. The motors will be used in the firm's new Douglas DC-3 transport planes.

Through-service without plane change is now offered by a combined UNITED AIRLINES and WESTERN AIR EXPRESS service recently approved by the C. A. A. The equipment exchange has been desired by the companies for three years but has been held up pending government approval.

New Zealand-to-Hawaii service will begin sometime in the future in Boeing Stratoclipper landplanes, it has been announced. The huge ships will maintain a 10-hour schedule between the two points and will connect with the American Clipper flying boats at Honolulu.

INTERNATIONAL: Great Britain now has orders for aircraft in this country in excess of TWO BILLION DOLLARS, it was recently reported by Arthur B. Purvis, head of the British Purchasing Mission.

Irvin Air Chute, Inc., of Buffalo, N.Y., has received an order for one million dollars worth of parachutes from the Canadian War Supply Board.

Final tally of the Battle of France shows that France lost 306 combat planes in the action against 982 for the fliers of the Luftwaffe. Although this ratio of 3-to-1 appears valiant, France lost more than one-third of her total effective fighter strength while Germany at all times maintained a 5-to-1 superiority.

Actual endless chain moving production lines are now in operation in England's Miles factory where the swift (250 mph) low-wing wood trainer the "Master II" is under mass production. Sixteen daily are being completed.

Russian bombers with "strange fish-like tails" were reported on display in a recent Aviation Day exercise in Moscow. The show included mass parachute troop maneuvers and glider trains.

Twenty-one veteran pilots have, so far, answered the call of Clyde Pangborne to enlist as ferry pilots on the Newfoundland-to-England jump in American-built bombers.

Canada has purchased exclusive manufacturing rights to a radically new type high-power aircraft motor developed by Lloyd M. Taylor, an Oakland, California, truck factory mechanic. Developing 1250 horsepower at a weight of only 1,000 pounds, the engine is made of sheet metal, steel tubing, cemented with a special flux and baked in an electric oven. It is liquid cooled and will cost only 1/3 what other equally powered engines cost.

PERSONALITIES: Doctor Lee DeForest, pioneer radio inventor, has developed an aerial torpedo capable of terrific speeds, great bomb carrying and direction by radio with no pilot aboard. It is now in the hands of War Department officials.

Colonel William E. Easterwood, Dallas (Texas), retired philanthropist, died in Santa Monica, California, recently after a long illness. Easterwood posted the $25,000 for the Paris-New York-Dallas flight of Costa and Bellonte, famed French fliers. He later made a similar offer for a Hongkong-to-Dallas flight which had no takers. A World War veteran, he put Dallas "on the map" in the aviation world.

Just to see if it could be done, Angel Stevens, Los Angeles stenographer, learned to fly in one day. Beginning at 5:15 a.m. with dual instruction she soloed at 7 p.m. the same day. Gordon E. Buck, her instructor, and 500 spectators watched her land, proving "that it CAN be done."

Round up all fifth columnists! Arrest all suspicious characters for questioning! Put the F. B. I. on the trail of saboteurs! Search all communists and alien agents of foreign powers! Up in smoke has gone Reginald Denny's model aircraft factory. With several new and radical designs in the process of completion and work progressing rapidly on new-type fighting and bombing planes, Denny's one-story corrugated metal aircraft works at 5751 Hollywood Boulevard, Hollywood, California, caught fire recently and flames gutted the entire structure. With a backlog of something like $250.00, the entire equipment and supplies of the firm were totally destroyed. Denny, Hollywood film actor, stated: "The disaster will put us way back in our production schedule, but just the instant the site is cold we will expend every energy to rebuild the plant and continue our work." The loss was unofficially estimated at $7,000 and the plant is now well underway towards completion. An additional statement to MODEL AIRPLANE NEWS readers by Denny: "Seriously, we will be a little late on your orders, fellows, but it won't take us more than two weeks to get rolling again."

Which might all appear to be a very good joke if it were not true that Denny is actually constructing radio-controlled gas models for the United States Army Air Corps for use as anti-aircraft targets at Wright Field, Dayton, Ohio.

—AMERICA FIRST IN THE AIR—

## Building the Profile Playboy

*(Continued from page 13)*

### Bill of Materials

One sheet of 3/32" by 2" by 8" medium balsa for the fuselage; one sheet 1/32" by 3" by 12" medium balsa for the wing; one sheet 1/32" for the tail surfaces; one block of 3-1/4" by 5/8" by 1/2" medium balsa for prop; one foot of No. 11 size piano wire; a pair of 7/16" diameter balsa wheels; one foot of 1/8" flat rubber; one hardwood nose plug, washers, cement, and sandpaper.

# COMET

1930 Comet Jubilee Year 1940

SAILPLANE GAS MODEL—Kit No. T-13—$5.95; postage 50c unless ordered from dealer.

Designed by CARL GOLDBERG

## *It's* PERFORMANCE *that* COUNTS!

**Claims don't mean much unless they are proven by performance. Comet models are doing just that in meet after meet throughout the country—performing so well that they take top honors with amazing regularity! Here are just a few recent achievements:**

Carl Goldberg won first place in the Indianapolis Mid States Contest on July 28 in Class C with his **ZIPPER**. The total time was over 17 minutes.

• • •

The Class C open event of the 1940 Akron Jr. Aviator National meet was won by Carl Goldberg flying a **SAILPLANE**. The total official time was over 43 minutes. On the last flight the model was in sight for only 27 minutes, actually staying aloft for over 58 minutes.

• • •

Jack Leiendecker won senior Class C event at Akron Jr. Aviator Nationals with his **ZIPPER**. Total time was over 29 minutes.

• • •

The Mid West Contest of Mad Modeller's Club at Ft. Wayne, Indiana was won by Jack Leiendecker using a stock **ZIPPER** with an Ohlsson "23" motor. The model was in the air a total of 27 min. 42 sec.

• • •

Lowell Southam, 17, of Salt Lake City won the Covered Wagon Days sanctioned meet on July 28, when he set a new state record for Class C on a very windy day with his **SAILPLANE**.

• • •

"I feel I must register a complaint concerning my Comet **SAILPLANE**. It flies much too **GOOD**! On Monday afternoon I began to make some tests and after two excellent flights with the motor throttled down, we let her rip. That is where we made our mistake, for when the motor cut out at 10 seconds, well—it is no wonder you called the ship the **SAILPLANE**. When two minutes had passed, and the ship showed no signs of coming any closer to the ground we hi-tailed it for the car. There was little wind and very little drift. There were a number of white fluffy clouds with dark bottoms floating around and after 12 minutes the ship passed under one of them. Another minute and it was just a speck on the base of the cloud. You'd better tell everyone to flight test their **SAILPLANES** with a brick strapped to the fuselage. They glide as if they were filled with helium." Signed—Claude McCullough, Ottumwa, Iowa.

• • •

In the recent Galesburg, Illinois, contest, Dean Fredericks of Davenport won first place with his **SAILPLANE**. His time was as follows: First flight—16 min. 45 sec. O.S. Second flight—3 min. 15 sec. Third flight—44 min. 45 sec. O.S. Total time of 64 min. 45 sec.

• • •

H. P. Andrews of Rock Island won first in Class B at Galesburg, Illinois with an Ohlsson "23" powered **ZIPPER**.

• • •

"I thought I would drop you a line telling you about the City Wide meet held in Topeka. I placed first with a **ZIPPER** powered with a Cyclone, my time being 12 min. 57 sec. for an out of sight flight. I now hold the Kansas State Trophy and also the City Wide Trophy, both taken with Comet models, one a **CLIPPER** and one a **ZIPPER**. Comet models in my notion are Grade A Models." Signed—J. B. Meek, Topeka, Kansas.

• • •

"No doubt you will be interested in learning of some of my achievements with your equipment in model airplane flying. June 9th at Okla. City, in the So. Western States meet Class B, first place with a Torpedo Powered **ZIPPER**. July 4th at Chicago, in the National Class C open, second place with an Ohlsson 60 powered Comet **SAILPLANE**. Plane was in the air for more than 29 min. in one flight. July 21st, at Omaha, Nebraska, first place with an Ohlsson 60 powered **COMET SAILPLANE**. I think the Ohlsson 60—**SAILPLANE** combination is the best ever with its High Climb, its Sensational Glide qualities and the ease with which it may be adjusted. Signed—Sherman S. Hachenberg, Kansas City, Missouri.

## *Two* NEW COMET HITS!

**STREAKY**—Class B Contest Glider
A new hand launched glider—a sure-fire performer! All parts printed full-size on carefully selected balsa; matched and tapered wing halves; new system of construction and alignment; wingspan 20 in., Kit No. 65 .....25c
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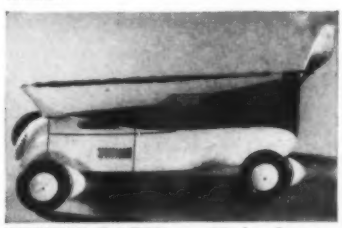

**BULLET RACER** — 10 in. long.—Comet's new hobby achievement—a miniature racing car driven by an air propeller that sends it scooting over the floor at amazing speed! Easy to build—body takes shape automatically. Very complete kit, many semi-finished parts.
Kit No. V1 .....25c
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# WHERE *Ohlsson* VICTORIES BEGIN

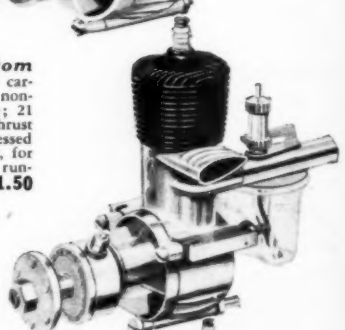
Your motor's efficiency depends on its power output per cubic inches of displacement. Under the N.A.A. rules all ships are rated and "weighted" on this basis. If your motor fails to develop its full quota of power according to its given displacement, it can't compete against some other motor performing at maximum efficiency for *its* displacement.

The success of Ohlssons at the Nationals and elsewhere is due to their consistently high power-to-displacement ratio—an efficiency which can only result from high engineering standards and quality construction throughout.

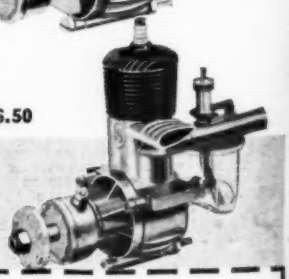
Ohlssons are now produced in the most up-to-date and complete plant in the industry. With the exception of spark plugs, every part used in Ohlsson & Rice motors is designed and completely produced in the new factory, a section of which is shown above. We will be glad to send modelers a folder illustrating "Precision Control" under which Ohlssons are built.

Get in "The Winners Circle" with an Ohlsson in your next meet. See your dealer today.

**OHLSSON 60 *Custom***
Full throated Venturi carburetor principle; non-sensitive needle valve; 21 roller bearings; 8 thrust bearings; shock-stressed crankcase! Complete, for inverted or upright running, **$21.50**



**OHLSSON 23**
*National Champion Class B.* Correctly hardened and balanced crankshaft, formed head hard steel piston, sturdy con. rod, enclosed timer. Complete **$16.50**



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*National Champion Class A.* Peak displacement .199 cu. in. Engineering features of Ohlsson 23 and interchangeable for dual purpose flying. Complete **$14.50**

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